REVIEW OF WORK SITE HEALTH AND FITNESS PROGRAMS

Clearinghouse Report No. 1

December 1995

THE COMMISSION
ON PEACE OFFICER STANDARDS AND TRAINING

STATE OF CALIFORNIA

REVIEW OF WORK SITE

HEALTH AND FITNESS PROGRAMS

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December 1995

CALIFORNIA COMMISSION ON PEACE OFFICER STANDARDS AND TRAINING

Published December 1995

*Revised July 1998, Reprinted March 1999

*This revision reflects only the commissioner's page and Preface page with updated Executive Director's signature.

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PREFACE

This report was produced in conjunction with the establishment of an information clearinghouse function within the California Commission on Peace Officer Standards and Training (POST). The report is intended for use as a resource document by agencies considering the implementation of an in-service health or fitness program. It contains the results of a statewide survey of existing California law enforcement in-service programs, an extensive review of the published empirical research findings on the costs and benefits of work site health and fitness programs, and a review of the statutory and case law that bears on the establishment of such programs. None of the specific programs or program elements described in this report are endorsed by POST. Rather, all information contained in this document has been included in the belief that it will assist agencies in making better informed judgments about local health or fitness program needs.

POST wishes to thank those agencies that participated in the survey of existing fitness programs and extends a special thank you to those individuals, both in law enforcement and in the private sector, who shared their time and expertise in providing the information which is reflected in this document.

POST is pleased to be able to provide this clearinghouse report as a means of assisting local law enforcement agencies. In this regard, any questions that you may have about this report or the information clearinghouse should be directed to the POST Standards and Evaluation Services Bureau at (916) 227-4820.

Kenneth J. O'Brien

KENNETH J. O'BRIEN
Executive Director

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EXECUTIVE SUMMARY

In 1993 the POST Commission directed that an information clearinghouse be established on health and fitness programs. This document constitutes the first major clearinghouse publication on this topic, and contains information that is intended for use by agencies that are either contemplating adoption of, or currently have, an in-service health or fitness program.*

The report contains information on the results of a recent survey of agencies in the POST program, a review of the published research findings on work site health/fitness programs, and a review of the legal considerations that must be addressed when designing and implementing a program.

SURVEY OF POST AGENCIES

The survey was conducted to determine the prevalence and nature of existing in-service fitness programs. Three hundred and fifty-nine of the 560 law enforcement agencies in the POST program responded (64.1%). A similar survey was conducted in 1985. Survey findings were as follows:

Prevalence of Programs

Eighty-five of the 359 responding agencies (23.7%) have a program. For responding police and sheriffs' departments only, the percentage is 23.2%. By comparison, 22.8% of the responding police and sheriffs' departments in the 1985 survey reported having programs.

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*Publication of this document represents the latest of several major undertakings by the Commission directed toward officer health and fitness. In 1985 the Commission established physical conditioning and testing standards that must be met by all graduates of the Regular Basic Course (Basic Academy Physical Conditioning Manual, Sacramento, CA: California Commission on Peace Officer Standards and Training, June 1990). In 1986 the Commission published a report on the status of work site fitness promotion programs in the public and private sectors, and disseminated the report to all agencies in the POST program (Brown, D.E., Krueger, K.G., and Berner, J.G., Fitness Promotion Programs in Law Enforcement: A Review of Current Practices, Sacramento, CA: Commission on Peace Officer Standards and Training, 1986). More recently, the Commission developed and field tested a voluntary fitness promotion program in five California agencies. The program was recently modified and is available from POST upon request (Krueger, K.G., and Berner, J.G., In-Service Physical Fitness Program: Officer's Manual and Coordinator's Manual, Sacramento, CA: Commission on Peace Officer Standards and Training, 1992).

Comparison of Current and 1985 Programs

- Sixty-five percent of all current programs are voluntary; whereas in 1985 the majority of programs (57%) were mandatory.
- Medical examinations are included in 61% of current programs compared to 37% of 1985 programs.
- Exercise programs are more common in current programs (41%) than in 1985 programs (22%).
- Health education is more common in current programs (19%) than 1985 programs (4%), and almost exclusively a part of current voluntary programs.

Features of Current Programs

Program Incentives

- 83% of all programs have some type of incentive (negative or positive); 71% have positive incentives; 31% have negative incentives. Positive incentives are part of 76% of voluntary programs and 62% of mandatory programs; negative incentives (i.e., negative incentives, or deterrents) are contained in only 4% of voluntary programs, but 81% of the mandatory programs.
- The most common positive incentives are cash (38% of all programs), paid time off (28%), authorization to work out on duty (19%) and paid gym/spa membership fees (19%). The average cash incentive is 2.9% of salary per year; paid time off averages 40 hours per year; average time allowed to work out on duty is 2.5 hours per week; average gym membership fees are $360.
- The most frequently occurring negative incentives are loss of job (30%) (though no one has lost a job for failure to meet program requirements), and some form of job restriction (16%); 90% of programs with negative incentives are mandatory programs.
- In 60% of the programs that provide some type of incentive, participants must pass a test to achieve/avoid the incentive; 10% require participation in some type of exercise activity in order to achieve/avoid the postive/negative incentive.

Types of Physical Ability Tests

- Nine of the 53 programs that have tests use work sample tests (17%); 72% use adult fitness type procedures.

Other Findings

- Mandatory programs have been in existence an average of 7.3 years; voluntary programs an average of 4.9 years. For both program types, those with health-related fitness assessments have been in existence, on average, the longest (6.1 years for voluntary programs; 7.7 years for mandatory programs).

- 54% of the programs were initiated by the office of the Chief or Sheriff; 20% by the City or County administration; 18% by the Police Officer or Deputy Sheriffs' Association.

- Improving officer health/fitness was the factor most often cited for program adoption (67% of programs), followed by reducing on-duty injuries and related workers' compensation claims (49%), improving job performance (45%), reducing disability retirements (40%) and reducing sick leave usage (20%).

- 65% of the programs are administered in house; 36% utilize outside resources (hospitals, fitness firms, etc.).

- 8 programs have been challenged by program participants; 4 were challenges to denied workers' compensation claims for injuries sustained in the program (in all instances workers' compensation was awarded).

- 52% of the programs are staffed by one or more officers (range is one-tenth of an officer to 20 full-time officers per year); exercise equipment is provided in 47% of the programs; some type of facility, usually a workout room, is provided in 41% of the programs; 8% of the programs provide time off to exercise, and another 8% provide paid gym memberships.

- 44% of programs reported at least one program-related injury; over twice as many mandatory programs as voluntary programs reported injuries (69% versus 31%); programs with a testing component were over three times as likely to report injuries compared to programs that do not test (55% versus 18%); and 63% of job-related programs reported injuries compared to 51% for health-related programs.

- 55% of all the injuries were minor sprains and bruises; 45% were serious, requiring significant time off for recovery; 60% of all the serious injuries occurred in mandatory programs.

- 46% of programs with a fitness component consider any injury related to the program to be compensable under workers' compensation; 16% consider an injury to be work related if it occurs while the officer is on-duty or is participating in the fitness test component of the local program; 6% cover

off-duty injuries provided they are sustained while participating in an approved exercise plan; 25% do not cover any type of injury.

- 20 agencies with programs are attempting to assemble program evaluation information; most of the information is either informal or not yet available. The most frequently tracked information is sick leave usage, use of department funded gym memberships, health status measures such as blood pressure, resting heart rate, percent body fat, and oxygen uptake, and the cost of program-related workers' compensation claims. In general, these agencies have found that sick leave decreases shortly after program implementation.

- The more formal evaluations that have been conducted have produced mixed results:

  - A department with 53 officers reported a three-year savings of $376,000.

  - Program-related injuries costing $2.7 million over a three-year period resulted in a large department (over 1000 officers) replacing a mandatory program with a voluntary program.

  - Two other agencies (45 officers and about 1000 officers) with long standing mandatory job-related fitness testing programs have reported unacceptable levels of program-related costs due to injuries.

  - Similarly, a department with 54 officers reported a one-year reduction in workers' compensation claims and related costs totalling $69,000 upon replacing its mandatory program with a voluntary program.

  - A department with 10 officers reported that its injury rate has decreased since instituting a mandatory program (no figures provided).

  - Two departments (19 officers and 154 officers) reported that based on informal observations, sick leave and time off for injuries have decreased since institution of their programs (no data provided).

  - One agency (84 officers) reported that it saved a net $58,000, including $90,000 in workers' compensation costs, in the year following implementation of a voluntary "Disability Avoidance Program" that contained fitness and psychological counseling as well as incentive pay for meeting certain exercise targets.

  - By far the largest agency that has had a mandatory program in place for some time is the California Highway Patrol. They report that both disabling back injuries and incidents of coronary heart disease have decreased since adoption of the program approximately ten years ago.

However, they also report unanticipated costs due to program-related injuries.

- The most commonly mentioned program strength was improved officer health (36% of respondents); the most commonly mentioned program weakness was failure to reach those who most need the program (36% of respondents).

The 75 responding agencies that have a program are listed in Appendix B. The agencies are grouped by whether their programs are mandatory or voluntary, and the following information is provided for each program: (1) the type of fitness testing conducted (if any), (2) the types of positive and negative program incentives (if any), (3) the overall program type (CHP model, exercise program only, etc.), and (4) the name and phone number of a person who can be contacted for additional information.

REVIEW OF PUBLISHED LITERATURE

Over 400 health and fitness articles were reviewed, including several that are themselves reviews of the literature. The vast majority of the published research is on private sector programs, which are almost exclusively voluntary in nature.

Although extensive, the published literature contains few studies that permit definitive conclusions about the effects of work site fitness programs. These shortcomings aside, there is general consensus among the "experts" that in the short term, those who participate in voluntary work site programs exhibit improved health and reductions in absenteeism, turnover and medical care costs. It is also generally reported that initial participation rates in such programs vary from 20% to 30%, drop below 10% within six months, and that those who continue beyond this time are often individuals who would continue to be physically active irrespective of their participation in a work site program.

Very little is known about the long-term effects of work site programs, although at least one noted author (Shephard, 1992) has cautioned that savings resulting from a healthier work force may be offset by increased retirement costs due to longer life expectancies.

LEGAL REVIEW

The review of the statute and case law focused on four major areas: agency liability for the actions of officers whose physical training is not adequate; protections offered to fitness program participants under federal and state

nondiscrimination in employment laws; workers' compensation for program-related injuries; and the impact of collective bargaining requirements on work site fitness programs. The general findings were:

- Law enforcement agencies can and have been held liable for injuries to others as a result of officers not being in adequate physical condition.

- Any injury sustained by an officer who participates in an agency-sponsored program is covered by workers' compensation, regardless of whether the program is voluntary or mandatory, and regardless of whether the injury occurs on duty or off duty, if it can be shown that the officer reasonably believed that the activity resulting in the injury was expected by the agency.

- If challenged, any agency-sponsored fitness program that adversely affects an officer's terms and conditions of employment must be shown to be job related and consistent with business necessity. Such challenges may be made on the basis of race, religion, color, national origin, gender, age, or physical handicap.

- Any medical information collected from participants in an agency-sponsored program must be job-related and consistent with business necessity, must be collected and maintained on separate forms, and must be treated as confidential.

- Fitness program standards based on separate norms defined by race, gender, etc., are prohibited pursuant to the 1991 Civil Rights Act. (Many tests of general physical fitness are scored on the basis of separate norms by gender group and/or age group.)

- Mandatory or voluntary health and fitness programs that have positive or negative financial incentives affecting wages, hours or other terms and conditions of employment are subject to the meet and confer requirements of the Meyers-Milias-Brown Act.

An extensive reference list is provided for persons seeking information beyond that summarized in the report.

CALIFORNIA LAW ENFORCEMENT AGENCY IN-SERVICE PHYSICAL FITNESS PROGRAMS

A survey was conducted of all law enforcement agencies in the POST program to determine the prevalence and nature of existing in-service physical fitness programs. A similar survey was conducted in 1985. This section summarizes the results of the current survey and contrasts the results with those obtained in 1985. The 359 agencies that responded to the current survey are listed in Appendix A.[1]

Prevalence of Programs

Eighty-five of the 359 responding agencies (23.7%) have a program. For responding police and sheriffs' departments only, the percentage is 23.2%. By comparison, 22.8% of the responding police and sheriffs' departments in the 1985 survey reported having programs. Thus, the prevalence of programs has remained essentially unchanged since 1985.

Comparison of Current and 1985 Programs

Table 1 provides comparative information on current and 1985 programs. The table shows frequency information for the three major fitness program components of fitness assessment, fitness intervention, and health education. (See Appendix C for a discussion of these components as well as definitions of the many terms used in the health and fitness literature.) The results are reported by survey year for (1) all programs, (2) voluntary programs only (i.e., program participation is voluntary), and (3) mandatory programs only. As shown in the table, 65% of all current programs are voluntary, whereas in 1985 the majority of programs (57%) were mandatory. With respect to different program components the findings were as follows:

> Fitness Assessment: Medical examinations are included in 61% of current programs compared to 37% of 1985 programs, and are more prevalent in current mandatory programs (81%) than in current voluntary programs (45%), whereas just the opposite was the case in 1985 (part of 22% of mandatory programs and 56% of voluntary programs).

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[1]The current survey was completed in 1994. The findings are based on a survey response rate of 64.1% for all law enforcement agencies in the POST program, and 78.4% for police and sheriffs' departments exclusively. By comparison, the response rate for the 1985 survey of police and sheriffs' departments was 80.8%. In both surveys, all responding agencies with a program were contacted by phone to obtain detailed information about the program.

Table 1

Comparison of Current and 1985 Programs*

		All Programs	Voluntary Programs	Mandatory Programs**
Agencies with Programs	Current	75	49 (65%)	26 (35%)
	1985	54	23 (43%)	31 (57%)
Program Components		% of all Programs	% of Voluntary	% of Mandatory
Fitness Assessment				
Medical Exam	Current	46 (61%)	22 (45%)	21 (81%)
	1985	20 (37%)	13 (57%)	7 (23%)
Physical Ability Tests	Current	53 (71%)	27 (55%)	26 (100%)
	1985	28 (52%)	5 (22%)	23 (74%)
Job-related***	Current	16 (30%)	4 (15%)	12 (46%)
	1985	12 (43%)	0 (0%)	12 (52%)
Health-related***	Current	37 (70%)	23 (85%)	14 (54%)
	1985	16 (57%)	5 (100%)	11 (48%)
Fitness Interventions				
Weight Control	Current	5 (7%)	3 (6%)	2 (8%)
	1985	2 (4%)	0 (0%)	2 (6%)
Exercise Programs	Current	31 (41%)	20 (41%)	11 (42%)
	1985	12 (22%)	9 (39%)	3 (10%)
Smoking Cessation	Current	8 (11%)	5 (10%)	3 (12%)
	1985	N/A		
Stress Reduction	Current	5 (7%)	4 (8%)	1 (4%)
	1985	N/A		
Alcohol Abuse	Current	6 (8%)	4 (8%)	2 (8%)
	1985	N/A		
Health Education	Current	14 (19%)	12 (24%)	2 (8%)
	1985	2 (4%)	2 (9%)	0 (0%)

* Eleven state agencies reported that they have the same program and were treated as a single agency for purposes of reporting the survey results.

** Seventy-seven percent of current mandatory programs are mandatory for all officers officers; 19% are mandatory for non-management personnel only; 1 program is mandatory for the ranks of lieutenant and above.

**** Percentages for job-related and health-related programs are based on number of programs with physical ability tests: 53 current programs versus 28 in 1985.

Physical abilities tests are included in 71% of current programs compared to 52% of 1985 programs, and continue to be more common in mandatory programs than voluntary programs; health-related tests are common in current programs (70% of all physical abilities tests), whereas there was a near even split between health-related tests and job-related tests in 1985; health-related tests continue to be more prevalent among voluntary programs than mandatory programs.

Fitness Interventions: Exercise programs are more common in current programs (41%) than in 1985 programs (22%); other fitness interventions are far less common (i.e., weight control, smoking cessation, stress reduction, and alcohol abuse prevention).

Health Education: More common in current programs (19%) than 1985 programs (4%); almost exclusively a part of current voluntary programs.

Features of Current Programs

Appendix B lists each of the 75 responding agencies that have a program. The agencies are grouped by whether they have mandatory or voluntary programs, and for each program the following information is provided: (1) the type of fitness testing conducted (if any), (2) the types of positive and negative program incentives (if any), (3) the overall program type (CHP model, exercise program only, etc.), and (4) the name and phone number of a person who can be contacted for additional information.

Program Incentives

Table 2 summarizes the findings on program incentives. Inspection of the table shows that 62 of the 75 surveyed fitness programs (83%) have some type of incentive (negative or positive). Overall, 71% of the programs contain positive incentives, 31% contain negative incentives, and 17% have both positive and negative incentives. While positive incentives are part of 76% of voluntary programs and 62% of mandatory programs, negative incentives (i.e., negative incentives) are contained in only 4% of voluntary programs, but are present in 81% of the mandatory programs.

The most frequent positive incentives are cash (38% of all programs), paid time off (28%), the ability to work out on duty (19%) and paid gym/spa membership fees (19%). The average cash incentive is 2.9% of salary per year (range = $100 per year to 12% per year[2]). Paid time off averages 40 hours per year (range = 16 to programs offering positive incentives are voluntary programs.

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[2]One agency reported that officers with over 19 years service can earn 2 percent per year through their 25th year for a total of 12%.

Table 2

Program Incentives (N = 75 agencies)

INCENTIVES	All	Frequency by Vol-untary	Mand-atory	Health Related	Job Related	Value of Incentive Average	Range	Agency Codes (See Appendix B)
POSITIVE INCENTIVES	53	37	16					
Paid time off	15	11	4	14	1	40 hr/yr	16-104 hrs/yr	6, 11, 16, 18, 25, 31, 32, 40, 42, 46, 52, 54, 60, 61, 62
Money	20	12	8	8	12	$600 - 2.9% /yr	$100 - 12% / yr	3, 5, 6, 8, 9, 21, 22, 27, 43, 46, 48, 49, 51, 56, 64, 65, 69, 71, 72, 74
Work out on duty	10	7	3	6	4	2.5 hrs/week	1 - 4 hrs/week	11, 17, 21, 23, 30, 42, 46, 51, 66, 68
Paid gym membership fees	10	10	0	2	8	$360/yr	$240-$600/yr	4, 14, 19, 28, 29, 37, 39, 55, 58, 67
T-Shirts, Bags, Towels, etc.	3							10, 47, 57
Certificates of recognition	2	0	2	1	1			20, 26
Plaques	1	0	1	1	0			6
NEGATIVE INCENTIVES	23	2	21					
Loss of job	16	0	16	6	10			6, 9, 10, 13, 20, 21, 26, 34, 40, 48, 53, 63, 64, 65, 74, 75
Job restrictions (Loss of promotability, special assignments, pay raise, etc.)	12	1	11	4	8			1, 6, 13, 21, 26, 34, 40, 53, 56, 63, 65, 75
Other (loss of bonus $ or other incentives, progressive discipline, remedial training)	12	4	8	8	4			2, 3, 6, 33, 34, 38, 52, 63, 65, 66, 74, 75
BOTH POSITIVE AND NEGATIVE INCENTIVES	13	2	11	6	7			3, 6, 9, 10, 20, 21, 40, 48, 52, 56, 64, 65, 74
NO INCENTIVES	13	12	1	4	9			7, 12, 15, 24, 35, 36, 41, 44, 45, 50, 59, 70, 73

104 hours per year). The average time allowed to work out on duty is 2.5 hours per week (range = 1 to 4 hours per week). Average gym membership fees are $360 a year (range = $240 to $600 a year). Seventy percent of
The most frequently occurring negative incentives are loss of job (30%), and some form of job restriction (16%), such as loss of eligibility for promotion, salary increases, special assignments, overtime and transfer. Ninety percent of programs with negative incentives are mandatory programs. No agency has yet terminated the employment of an officer for failing to meet program requirements.

While not shown in Table 2, in 60% of the programs that provide some type of incentive, participants are required to pass a test to achieve/avoid the incentive, and 10% require officers to participate in some type of exercise activity in order to achieve/avoid the positive/negative incentive.

Types of Physical Ability Tests

As reported earlier, 53 of the 75 programs (71%) include physical ability testing. Nine of the 53 programs that have tests use work sample tests (17%), and 5 of these use the POST Basic Academy Work Sample exit test.[3] Seven of the 53 programs (13%) use the California Highway Patrol test procedure, which is comprised of fitness-type tests that are empirically related to a series of work sample tests. A comparison of the POST Basic Academy Test and the CHP Test Battery is shown in Table 3.

In contrast to job-related tests, 72% of the programs with a fitness testing component use adult fitness type procedures, and one agency uses both a work sample test and an adult fitness battery.[4] A breakdown of the specific test events used in the various programs is shown in Table 4. The events are listed separately by test type (i.e., work sample versus adult fitness). As shown in the table, the most common fitness-type events are sit and reach (82% of fitness-type tests), body fat (67%), sit-ups (58%), 1.5 mile run (44%), and push-ups (42%).

Medical Examinations

Medical examinations are a part of 61% of the programs. More significantly, medical examinations are required in 76% of those programs that have physicaltesting, up sharply from 26% in the 1985 survey. In 64% of programs with a medical screening component, a full medical exam is given only if indicated by a pre-screening procedure, such as resting heart rate/blood pressure, age, or the response to a pre-exercise readiness questionnaire. In 12% of the agencies with programs, a periodic medical exam is provided or required apart from the program, usually as part of a negotiated benefit.

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[3] Work sample tests consist of events that simulate actual job (i.e., work) tasks.

[4] Officers are required to take a work sample test twice each year but may opt to take an adult fitness battery in lieu of the work sample.

Table 3

Comparison of POST Work Sample Test and CHP Test Battery
(Job-Related Fitness Assessment Procedures[5])

POST Work Sample Test[6]	CHP Job-Related Generic Test[7,8]
RUN 99 YARDS, GOING AROUND, OVER OR BETWEEN OBSTACLES (but not under obstacles or over tall obstacles)	PEDOL - Pedal a bicycle ergometer for 2 minutes. Measures energy capacity to run 500 yards in 2 minutes.
RAPIDLY DRAG A NONRESISTING PERSON 32 FEET (no assistance from others)	SIDE STEP (13 crossings in 10 seconds). Measures ability to sprint 100 yards in 20 seconds or less
RAPIDLY CLIMB A 6-FOOT CHAIN LINK FENCE HAVING FOOTHOLDS OR HANDHOLDS	STANDING LONG JUMP (minimum of 60 inches). Measures ability to sprint 100 yards in 20 seconds or less
RUN 500 YARDS (equivalent to 1 lap plus 60 yards of a standard running track; continuous run with few or no obstacles)	TRUNK STRENGTH (minimum 113 pounds). Measures ability to carry a stretcher up a 30% grade for 75 feet in 44 seconds
RAPIDLY CLIMB A 6-FOOT SOLID FENCE HAVING NO FOOTHOLDS OR HANDHOLDS	UPPER BODY BATTERY OF 3 TESTS (shoulder adduction, grip strength, and a 1-minute arm test on a bicycle ergometer). Measures ability to carry a stretcher up a 30% grade for 75 feet in 44 seconds

Program Implementation Issues

Agency representatives were asked when and how their programs came into being, and whether any particular problems were encountered during the implementation process. The significant findings of these inquiries are described below.

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[5] See Appendix C for definition of job-related fitness assessment procedures.

[6] See Basic Academy Physical Conditioning Manual, Sacramento, CA: California Commission on Peace Officer Standards and Training, June 1990.

[7] See California Highway Patrol Physical Performance Program, HPM 70.9. Sacramento, CA: California Department of Highway Patrol, 1984.

[8] Percent body fat, resting heart rate and blood pressure are also taken but for information only.

Table 4

Contents of Fitness and Work Sample Test Batteries

Fitness battery (N = 45)	N	%	Work sample battery (N = 9)	N	%
1.5 mile run*	20	44%	Wall climb	8	89%
12 min run*	2	4%	Dummy drag (165 lbs)	9	100%
Push-ups*	19	42%	Foot chase	9	100%
Pull-ups	2	4%	Obstacle course	8	89%
Sit-ups*	26	58%	Chain link fence climb	5	56%
Trunk flexion (Sit and Reach)*	37	82%			
Body fat*	30	67%			
Bench press*	7	16%			
Step test*	10	22%			
Oxygen uptake (Treadmill or bike ergometer)*	13	29%			
Stair run	1	2%			
Height/weight ratio	2	4%			
Shuttle run	3	7%			
Long jump/Vertical jump*	8	18%			
Grip strength*	11	24%			
Shoulder adduction**	7	16%			
PEDOL bike test**	7	16%			
Side step**	7	16%			
Dynamic or Wingate arm tests**	9	20%			
Wall slide hold	3	7%			

* A reference for obtaining protocol is given in Appendix C.

** Protocol is in CHP program, see footnote 7.

When Were Programs Implemented? Four percent of the programs were initiated prior to January 1, 1980; 20% between January 1, 1980 and December 31, 1984; 28% between January 1, 1985 and December 31, 1990; and 43% began their

programs after January 1, 1990.[9] Average program length (in years) is shown by program type (i.e., voluntary and mandatory) in Table 5. As indicated in the table, mandatory programs have been in place an average of 7.3 years; voluntary programs an average of 4.9 years. For both program types, those with health-related fitness assessments have been in existence, on average, the longest (6.1 years for voluntary programs; 7.7 years for mandatory programs).

Table 5

Tenure of Programs by Type of Program

Type of Fitness Program	Voluntary		Mandatory		Total	
	Avg Yrs	N	Avg Yrs	N	Avg Yrs	N
Exercise Program only, no tests	3.9	8		0	3.9	8
Health-related Fitness Assessment	6.1	25	7.7	15	6.7	40
Job-related Fitness Assessment	1.7	3	6.8	11	5.6	14
Wellness Program	3.5	9		0	3.5	9
Totals	4.9	45	7.3	26	5.8	71

How Were Programs Initiated and Implemented? Fifty-six of the 75 agencies knew how their programs were initiated. A breakdown of who initiated these programs is shown in Table 6. Over half (54%) of the programs were initiated by the Office of the Chief or Sheriff. The next most frequent points of program origination were the City or County administration (20%), and the Police Officer or Deputy Sheriffs' Association (18%). By comparison, in 1985, agencies most frequently reported that programs were initiated either by individual officers (40%) or by the Chief/Sheriff (37%).

Steps Taken to Implement Programs. Although no clear trend emerged, the most commonly reported steps taken to implement the programs are shown in Table 7. Also shown are comparative data from the 1985 survey. The results are very similar for the two survey periods.

[9] Implementation date was unknown for 5% of the programs.

Table 6

Who Initiated Programs (N=56)[10]

Point of Initiation	N	Percent
Officers' Association (Police or Sheriff)	10	18%
Chief's or Sheriff's office	30	54%
City or County Administration	11	20%
Joint effort between Dept. and Association	3	5%
Private business	2	4%

Table 7

Steps Taken to Implement Fitness Programs

Implementation Steps	Current (N=56)	1985 (N=54)
Survey existing programs in other departments	35%	36%
Seek the support of local union or association	36%	32%
Seek the support of city/county administration	31%	34%
Meet with fitness consultants/professionals	23%	21%
Contact POST to obtain information	17%	N/A
Contract with a gym or fitness group	15%	15%
Survey employees to determine level of interest in a program	9%	19%

Factors Which Influenced Choice of Program Type. The dominant factor influencing the type of program chosen was cost, with 70% of those contacted reporting cost to be a major consideration. By contrast, in 1985, three factors played about equal roles: job-relatedness, ease of administration and success in other departments.

[10] Source of initiation unknown for 19 programs.

Program Goals. Factors (or goals) cited as providing the impetus to implement a program are shown in Table 8. Improving officer health/fitness was the factor most often cited for program adoption (67% of programs), followed by reducing on-duty injuries and related workers' compensation claims (49%), improving job performance (45%), reducing disability retirements (40%) and reducing sick leave usage (20%). The factors cited most frequently in 1985 were divided about equally between reducing disability retirements, reducing on-duty injuries, and employee interest.

Table 8

Factors Influencing Decision to Implement Program

Goal/Factor	N	%
Improve officer health/fitness	50	67%
Reduce on-duty injuries/workers' compensation claims	37	49%
Improve job performance	34	45%
Reduce disability retirements	30	40%
Reduce sick leave usage	15	20%
Employee interest	8	11%
Improve morale	6	8%
Reduce exposure to vicarious liability	2	3%
Local critical incident (heart attack, fights)	2	3%
Improve public image	2	3%
Goals not articulated	1	1%

Role of Local Association. The local police officer/deputy sheriffs' association played a positive role in the implementation of 65% of the programs -- proposing the program in 10 instances, actually designing the program in two, and showing support or encouragement in 35 others. The local association played no role in implementation in 23 programs and resisted the program in two.

Participation Rates in Voluntary Programs

Representatives from agencies with voluntary programs were asked what percentage of their eligible officers actually participate in the program. Only 35 of the 49 agencies with voluntary programs were able to respond, and of those who

did respond, the vast majority provided estimates that could not be confirmed by actual records.[11] Thus, the information should be reviewed with caution. Nonetheless, since the representatives who provided the estimates were generally confident in their ability to provide accurate "guesses," the results are reported, by program type, in Table 9. The average reported participation rate was 48% for all program types and ranged from a low of 45% for programs with health-related fitness assessments, to a high of 69% for two job-related fitness programs. These participation rates are considerably higher than the 20% rate which is consistently reported in the published literature on private sector work site health and fitness programs.

Participation rates were also reviewed from the standpoint of how long the programs have been in operation. No clear trends were found.

Table 9

Participation Rates in Voluntary Programs

Type of Fitness Program	Percent of Eligible Participating	
	%	N
Exercise Program only, no tests	46%	7
Health-related Fitness Assessment	45%	21
Job-related Fitness Assessment	69%	2
Wellness Program	50%	5
Totals	48%	35

Program Administration

Sixty-five percent of the programs are administered in house. Thirty-six percent utilize outside consultants to administer or assist in the administration of the program, 30% of which are hospitals, 26% are fitness firms and 22% are professional consultants. The majority of programs that utilize consultants are based on health-related concepts (81%) as opposed to programs based on job-related tests.

[11] The primary reasons given by those who did not respond were "The program just started," "We never collected this kind of information," and "All program data is confidential."

Legal Challenges

Eight formal challenges have been made against agencies with fitness programs. Four were for workers' compensation stemming from injuries sustained in the program. In each instance, the injured individual was awarded workers' compensation benefits. Another agency prevailed over the complainant at a civil service hearing in which a new hire was denied bonus points as part of an incentive-based fitness program. A sixth agency was challenged at the time the mandatory program was instituted. However the challenge was to the program as a "meet and confer" issue and not to the validity of the test or any part of the program itself. The matter was resolved when the agency entered into a contract with the challenging association. A seventh agency was challenged on the validity of the CHP program for probation officers. However the program was discontinued before the issue was resolved. The final challenge, which has not been resolved, is by an officer over 40 years of age who participated in a voluntary program. The challenge concerns the appropriateness of a medical pre-screen for officers over 40 years of age as well the use of gender based standards in the 1.5 mile run (i.e., different standards for men and women).

Agencies were asked if special procedures were developed to handle program-related grievances. No special procedures were reported. All agencies treat grievances related to their programs on a case-by-case basis according to the normal procedures contained in the contract between the employee association and the city or county.

Resources Devoted to Program Operation

Fifty-two percent of the programs are staffed by one or more officers (range is one tenth of an officer to 20 full-time officers). Exercise equipment (such as weights and exercise bikes) is provided in 47% of the programs; some type of facility, usually a workout room, is provided in 41% of the programs. Eight percent of the programs provide time off to exercise, and another 8% buy paid gym memberships for their participants.

Program-Related Injuries

Forty-four percent of the agencies with programs reported at least one program-related injury. Over twice as many mandatory programs as voluntary programs reported injuries (69% versus 31%), and programs with a testing component were over three times as likely to report injuries compared with programs that do not have any type of physical ability test (55% versus 18%). Finally, 63% of job-related programs reported injuries compared with 51% for health-related programs.

While nearly 55% of all the injuries reported were minor sprains and bruises, 45% were serious, requiring significant time off for recovery. Twenty-seven percent of the programs that experienced injuries reported serious foot/knee/ankle injuries

which took the injured officer off the street for up to six months. Eighteen percent reported unspecified serious injuries, including injuries requiring surgery, which again took officers off the street for significant time periods. Three agencies reported serious back injuries, including one career ending back injury; one agency reported a fractured skull and one other reported a career ending heart attack. Sixty percent of all the serious injuries occurred in mandatory programs.

Program-Related Injuries and Workers' Compensation

Eighty-four percent of the programs have either a fitness component or an exercise component.[12] Representatives from the agencies with these programs were asked whether injuries sustained in the program were covered under workers' compensation. Forty-six percent consider any injury related to the program to be compensable under workers' compensation; 16% consider an injury to be work related if it occurs while the officer is on-duty or is participating in the fitness test component of the local program; 6% cover off-duty injuries provided they are sustained while participating in an approved exercise plan; 25% do not cover any type of injury; and three respondents were unsure whether a workers' compensation claim would be approved.

Program Evaluation

Twenty of the agencies with programs indicated that they are attempting to assemble program evaluation information. Unfortunately, most of this information is either informal or not yet available. Moreover, the type of information collected varies. The most frequently tracked information is sick leave usage, use of department funded gym memberships, health status measures such as blood pressure, resting heart rate, percent body fat, and oxygen uptake, and the cost of program-related workers' compensation claims.[13] In general, these agencies have found that sick leave decreases shortly after program implementation.

The more formal evaluations that have been conducted have produced mixed results:

A department with 53 officers reported a three-year savings of $376,000;[14]

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[12]The other 16% are wellness programs that promote health through educational and various health intervention strategies, such as smoking cessation and low-back injury prevention seminars.

[13]Workers' compensation considerations are discussed on pages 42-45.

[14]Savings were for a city-wide employee assistance program that includes mandatory medical screening for all employees, and mandatory physical testing for police and fire department personnel.

Program-related injuries costing $2.7 million over a three-year period resulted in a large department (over 1000 officers) replacing a mandatory program with a voluntary program;

Two other agencies (45 officers and about 1000 officers) with long standing mandatory job-related fitness testing programs have reported unacceptable levels of program-related costs due to injuries;

Similarly, a department with 54 officers reported a one year reduction in workers' compensation claims and program administration costs totalling $69,000 upon replacing its mandatory program with a voluntary program;

A department with 10 officers reported that its injury rate has decreased since instituting a mandatory program (no figures provided);

Two departments (19 officers and 154 officers) reported that based on informal observations, sick leave and time off for injuries have decreased since institution of their programs (no data provided); and

One agency (84 officers) reported that it saved a net $58,000, including $90,000 in workers' compensation costs, in the year following implementation of a voluntary "Disability Avoidance Program" that contained fitness and psychological counseling as well as incentive pay for meeting certain exercise targets.

By far the largest agency that has had a mandatory program in place for some time is the California Highway Patrol. They report that both disabling back injuries and incidents of coronary heart disease have decreased since adoption of the program approximately ten years ago. However, they also report unanticipated costs due to program-related injuries.

Program Strengths and Weaknesses

When asked about the strengths and weaknesses of their programs, agency representatives responded with the variety of answers shown in Table 10. Overall 75% of the agencies were able to identify what they considered a clear program strength and/or weakness. It is interesting to note that the most common strength and the most common weakness are both related to officer health. Thirty-six percent said the major strength was the program's ability to improve officer health, and another 36% said that the program's inability to reach those who need it was their program's major weakness. Consistent with this theme, another 14% indicated that participation rate was their major weakness. Improving officer health was reported as a strength with twice the frequency as money (18%) or improved morale (14%), which were the next most frequently mentioned strengths. The fact that the program was job-related was seen as a major strength by 13% of respondents. Other frequently mentioned program weaknesses were injuries (16%) and lack of accountability or control over what program participants are doing (16%).

Table 10

Program Strengths and Weaknesses (N = 56)

Program Strengths	N (%)	Program Weaknesses	N (%)
Improves officer health status	20 (36%)	Doesn't reach those who need it	20 (36%)
Money given as incentive	10 (18%)	Program produces injuries	9 (16%)
Improves morale	8 (14%)	Lack of accountability	9 (16%)
The program is job-related	7 (13%)	Low participation rate (inadequate incentive - no money, poor facility)	8 (14%)
The program is voluntary	3 (5%)	Fitness standards are too low	4 (7%)
The workout facility is nice	2 (4%)	Fitness measures are unreliable	3 (5%)
Other strengths	6 (11%)	Lack of evaluation component	2 (4%)
		Operating costs are too high	1 (2%)

Program Recommendations

Representatives from each agency with a fitness program were also asked to provide recommendations for persons from other agencies who are seeking to implement a fitness program. The most common responses to this question were: get a commitment, at the very beginning, from the local police officer or deputy sheriffs' association (18%); conduct research including a needs assessment in order to identify program goals and alternative ways of reaching them (15%); make the program mandatory with job-related tests (15%); make the program friendly, voluntary and offer monetary incentives (15%); utilize professional vendors and facilities to run the program and/or to train staff (9%); focus on overall health and wellness (7%); and avoid sanctioning off-duty activities that could lead to injury (5%).

LITERATURE REVIEW

A vast number of articles on work site health promotion programs have been published since POST last reviewed this literature in 1985. Articles range from simple descriptions of local programs to complex discussions involving the application of various economic statistical models to health and fitness program data. As was the case in the 1985 review, POST's present effort focused upon those aspects of the fitness literature thought to be of most interest to law enforcement, namely the relation of work site fitness programs to productivity (absenteeism), on the job injury rate, medical cost containment, health and fitness status, and psychological well being. Findings with regard to each of these areas, as well as the problem of "exercise adherence," are summarized below. Readers interested in more detailed information are referred to Appendix D, which contains a collection of research notes used to prepare this section.

In 1985 it was found that the overall available evidence in support of the effectiveness of fitness promotion programs to achieve the anticipated benefits was relatively weak, but that the lack of empirical data had not deterred employers from adopting programs.[15] The conclusion reached after the present review is similar. There is still a paucity of empirical data showing a clear relationship between implementation of a health promotion program and achievement of the projected benefits. Furthermore, the majority of the published literature continues to focus on voluntary programs in the private sector.

The problem in the research literature is primarily related to the design of the studies that have been conducted. Most critics acknowledge the inadequacy of the research methods employed and contend that the findings are usually explainable by factors other than the program under study. Chenoweth, (1990b) for example, reviewed the literature on cost-effectiveness analyses of work site health promotion programs and reported that while the short term results of work site health promotion programs are well documented, very few cost-effectiveness analyses have been performed; and in those that have, most cost effectiveness claims are misleading. All but a few studies are moderately or seriously flawed in terms of assumptions, data, or methodology. Often, the studies exhibit a combination of errors.

According to Chenoweth (1990), there are several reasons for the lack of acceptable cost-effectiveness studies of work site health promotion:

(1) Short-term view - resources are not allocated to conduct systematic evaluation. Many studies also evaluate health-promotion programs

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[15] Results of the 1985 review can be found in Brown, D.E.; Krueger, K.G., and Berner, J.G., Fitness Promotion Programs in Law Enforcement: A Review of Current Practices, Sacramento, CA: Commission on Peace Officer Standards and Training, 1986.

exclusively on participation rates and level of compliance. The direct and indirect impact of absenteeism, health care costs, job-satisfaction and other outcomes is unknown.

(2) Programs are often housed in personnel or medical departments, which fosters the program director's bias to evaluating programs in a positive manner. Reports are written to justify program costs, using whatever convenient and supportive data are available. Often, when a positive evaluation has been conducted, follow-up and more rigorous evaluations are not implemented.

(3) Companies do not keep good individual records of absenteeism, health care costs, job satisfaction or job performance. Thus, valid measures on these variables are not possible.

(4) Many companies believe the inherent value of health promotion is equal to or greater than the value derived from other corporate benefits (e.g., stock options, dental insurance, child care and tuition-aid programs) and therefore do not measure it.

(5) Most significantly, many theoretical, ethical and administrative factors prevent rigorous evaluations at most work sites. Limited time, finances and personnel expertise are common pitfalls.

The specific findings of the literature review are presented below.

Productivity

Productivity, which refers to the quality or quantity of performance, has been very difficult to measure. There are dozens of large scale studies that claim improved productivity after the introduction of fitness and lifestyle programs (Shephard reviewed 26 studies, 1986, 1989), but few are based on satisfactory experimental designs and the results are therefore subject to many alternative explanations (e.g., increased worker satisfaction, relief from boredom, increase in arousal). The Hawthorne effect[16] is also cited as a factor in studies measuring productivity (Shephard, 1992; Chenoweth, 1993; Golaszewski et al., 1992).

Definitions of productivity also vary from study to study, as do the methods of assigning a dollar value to productivity. For jobs where heavy physical effort is required, a program-induced increase in physical working capacity might be thought advantageous, but this presupposes that effort tolerance rather than poor management or union restrictions limit performance. In a comparison of trained and untrained firefighters, Danielson and Danielson (1982) reported an increase in

[16]The Hawthorne effect, which is a major source of bias in behavioral science research, occurs when people who are being studied know that they are under observation and change their behavior to fulfill what they believe the observers want.

the length of fire breaks cut by the trained group, but only when they were fully stressed by hot and arduous conditions. While the typical criterion in objective studies has usually been the time required to complete a given task relative to a standard time for the same procedure (Shephard, 1992), other criteria have included subjective assessments, such as perceptions of workload and fatigue (Halfan et al., 1990), which are subject to reporting bias by participants (Yancey and Kelly, 1990).

No law enforcement studies were found that have attempted to relate measures of productivity to an in-service physical fitness program.

Absenteeism

Although many research studies have examined the effect of instituting a health promotion program on absenteeism, the results of these studies are unclear. On the one hand, while many authors suggest that fitness and lifestyle programs can decrease absenteeism, many critics warn that the effect may be attributable to other factors. Shephard (1992), who is one of the more staunch critics of the health promotion research literature, notes that, methodologically, the definitions of absenteeism have not been consistent, that relatively few studies have used controls, and that it is difficult to avoid a Hawthorne effect. Also of note is the observation by several researchers that while there is a clear relationship between program participation and absenteeism for males, the relationship for females is not clear (Gettman, 1986; Baun et al., 1986; Tucker et al., 1990; Horowitz, 1987; Karch et al., 1988). Additionally, in view of studies which have shown that relating pay closely to attendance increases attendance, some researchers feel that pay may have more impact on employees' decisions about job attendance than any other factor (Gwaltney, 1994; Lawler and Hackman, 1969; Lawler, 1971).

The situation in law enforcement appears to parallel that in the private sector. On the one hand, as found in a well-designed, short-term longitudinal study conducted in 1993 by the New York City Police Department (Bratton and Julian, 1994), fitness program participants, and/or those who are in better physical condition appear to be absent less frequently. New York City officers who were in better condition prior to academy training were found to use less sick leave in a follow-up study two to four years later. Also, a survey-based study conducted by Frost (1987) found that 71% of California law enforcement agencies which had some type of fitness program experienced 19% less average sick leave usage than departments without a fitness program. Frost, however, also reported that 12% of these agencies saw no change in usage and that 18% reported an increase in sick leave usage due entirely to program-related injuries. Finally, regarding pay incentives and attendance, some agencies that do not have a health promotion program are rewarding employees monetarily when they do not use the number of sick days allotted to them. The Huntington Park Police Department, for example, provides 12 sick leave days each fiscal year to all employees. Employees can accrue a maximum of 704 hours of unused sick leave for use for long-term

disability in the event of a serious injury. At the end of each fiscal year, employees can bank one-half of their annual unused sick leave for that fiscal year and receive payment at their regular salary rate for the remaining half of the unused sick leave. Since implementing this policy, the department has experienced an 80 percent reduction in the amount of sick leave used by department personnel (Gwaltney, 1994). This finding supports the notion that relating pay to attendance may have a greater impact on sick leave use than implementation of a health promotion program.

Turnover

Although several private sector studies have shown that turnover is reduced for persons who participate in health promotion programs, critics have observed that since most analyses have been carried out on white-collar workers at times of nearly full employment, the importance of a reduction in turnover has probably been overstated relative to the average impact upon a post-industrial society. Moreover, any benefit related to reduced turnover is critically dependent upon the uniqueness of the corporate program (Shephard, 1992). Studies bearing on the relationship between fitness promotion and turnover in law enforcement agencies have not been conducted.

Health Status

The effects of fitness programs on the health status of program participants are well known. Work site smoking cessation programs, hypertension control programs, and physical activity/exercise programs (Academic Press, 1983; Paffenbarger et al., 1993) have all been convincingly demonstrated to improve the health status of those who participate in and complete such programs. There is no question that these activities work. The problem is one of getting high risk individuals to become program participants. An extensive discussion of the factors that bear on the relation of health and fitness programs to improved health status appears in Appendix D.

Health Care Cost Containment

According to Vickery et al. (1986), there is strong evidence that poor employee health behaviors are associated with increased health care costs. Shephard (1992) notes that despite the fact that few well controlled experiments exist, health and fitness programs appear to yield benefits that, at least in the short-term, more than match program costs. However, the impact of health and fitness programs on long-term medical and pension costs is less certain because of changing retirement policies and other factors (Keeler et al., 1989). Examples of research in this area are contained in Appendix D.

To date, the long-term cost containment benefits of health and fitness programs have received only limited study. Most critics agree that this is an important area of future research, in part because of the capital costs of facilities and in part because many of the suggested early benefits of a work site program could arise from a Hawthorne effect. Also, a major concern of health economists is that an extension of longevity induced by an increase of habitual physical activity might place an excessive burden on pension plans (Russell, 1984; Shephard, 1989b, 1991a).

Interpreting Health Care Costs

Despite the available evidence, current thinking on cost containment is that the relation of health care costs and health promotion is complex and involves many more factors than have been typically reported in the literature. According to Lynch (1994), even though well-designed studies exist that demonstrate the economic benefits of positive health habits, we should nevertheless be cautious or skeptical about this evidence because health care costs more accurately measure the use of health services than health status. A discussion of the factors that may cloud the interpretation of health care cost data is provided in Appendix D.

On The Job Injuries

Tonti et al. (1987), report that minor sprains, strains and wounds account for more than 60% of reported workplace injuries and that reducing the number of such injuries can have a significant financial impact on an organization. In a 1990 study, Hilyer and associates (Hilyer et al., 1990) randomly assigned firefighters to a flexibility exercise group or to a control group. They found a number of injuries in both groups, but the cost of lost time per injury was $1,888 less in the experimental group. At Tenneco, Tsai et al. (1988) found that injury reduction was greatest in exercisers over the age of 50. However, injury rates increased slightly in occasional exercisers. Baun et al. (1987) found that exercisers submit more but less costly claims. Tonti et al. (1987) reported that establishing an on-site rehabilitation center in a manufacturing setting was cost effective; not only were there fewer injuries, but recovery time was quicker leading to lower treatment costs. Some estimate that an employee fitness program can reduce injuries 50-90 percent (Gibbons, 1989). In law enforcement, Superko et al. (1988) reported that the rates of sick leave usage and on-the-job injuries in a group of 4,480 CHP officers decreased after 18 months following the implemenation of a physical testing program. Taking the most conservative estimate, and assuming an equal impact upon minor and fatal injuries, as well as a 20% program participation rate, Shephard (1989) has estimated savings of about $43 per worker per year in the area of injuries. According to Shephard (1992), however, most studies in this area ($n = 12$), have been uncontrolled, and the findings are correspondingly difficult to assess.

Low Back Injury

Industrial injury compensation is a major industrial expense and the prevention of low back problems is a commonly cited dividend of fitness programs for blue collar workers (Asfour, 1984; Hartman and Cozzetto, 1984; Hilyer et al., 1990; Shore et al., 1989; Warner et al. 1988). Shephard (1992) reports that fifty percent of workers experience back pain at some point in their career and back-related injuries affect as many as 35% of the workforce and account for about 25% of compensation claims (Yu et al., 1984; Shi, 1993).

Low back pain prevention programs contain both an exercise and education component. Exercise is primarily oriented toward stretching and emphasizes flexibility of the hamstrings and lower back. Many organizations show videos or sponsor seminars on techniques for lifting and carrying out daily activities which protect the spine from unnecessary stress. A study by Shi (1993) reported that when a local government health intervention included both exercise and education, there was a modest overall decline in back pain prevalence but a highly significant reduction in risky behaviors as measured by a health risk assessment questionnaire.

Psychological Benefits

Many studies investigating the psychological benefits of exercise have suggested that regular exercise produces improvements in circumscribed symptoms including self-reported depression and anxiety in both clinical and non clinical populations and can improve some Type A behaviors that lead to heart attacks (Taylor et al., 1985). According to Lovato et al. (1994), there is some evidence that exercise has beneficial effects on psychological functioning. In addition to the above, other benefits frequently purported as being associated with exercise include reduced muscle tension; improved mood, temperament, self-concept, and emotional stress tolerance (Blair et al., 1985); and increased self-esteem, sense of control, cognitive functioning (Sachs and Buffone, 1984), and general well-being.

Unfortunately, the majority of these studies have lacked adequate control conditions necessary to infer a causal relationship (Emery et al., 1989; Hughes, 1984; Sime, 1984). Significant methodological problems have also been identified, including biased selection of subjects, non random assignment to treatment conditions, vague reporting of specific protocols used, inappropriate dependent measures and small sample sizes.

Stress

Wagner et al. (1987) report that of all the risk factors that they examined, stress is the least precisely specified:

> That the phenomenon of work-related stress is real is beyond question. But to define it precisely and quantify it meaningfully may be beyond the realm of possibility.

Work related stress has been discussed in the literature for decades, and stress is the source of an increasing number of employee compensation law suits. Still empirical literature on the nature and extent of the phenomenon is almost non-existent in the business literature. Warner et al. (1988), in a critical review of over 600 empirical studies, found no economic analysis of work site programs purported to alleviate stress.

Recruitment and Adherence

The problem of recruiting and keeping participants in work site health and fitness programs is well documented in the published literature. Attempts to demonstrate improved productivity, reduced absenteeism and contained medical care costs are greatly influenced by who participates in the program and for how long. Absenteeism is mainly attributable to about 20% of employees, and unfortunately, such individuals do not usually enroll in a work site fitness program. (Conrad, 1987; Shephard, 1986, 1986a). Likewise, medical costs are largely attributable to a small proportion of workers who again are unlikely candidates for exercise programs. On the other hand, if such individuals could be persuaded to exercise, benefits might be greater than currently inferred from studies of convinced exercisers (Wagner, 1987).

As mentioned previously, one of the major criticisims of the empirical studies reviewed is sample bias. This usually refers to the fact that participants in exercise activities are self-selecting, implying that the majority of individuals who participate are already committed exercisers, and that the benefits reported for the program would accrue regardless of the program's existence because these self-selecting individuals would continue to exercise and pursue a healthy lifestyle in the absence of the program.

With respect to adherence to exercise, despite increasing evidence suggesting the physical and psychological benefits of regular exercise, recent reviews have reported that the majority of people who begin an exercise program stop, often within the first few months (Lees and Dygdon, 1988; Martin and Dubbert, 1985). According to Dishman (1982), it is not uncommon to observe a 50% dropout rate within 6 months. The long term participation rate in a number of work site exercise programs was found to drop from an initial 20% to less than 10% within a year. (Fielding, 1984; Leatt et al., 1988; Shephard, 1989, 1992).

Elements of Successful Programs

Several authors have analyzed the components of successful work site heath and fitness programs in an effort to identify critical elements for program success. Articles published by Gibbons (1989) and Pelletier (1991) are typical. These authors stress the following:

Support of top management
Appointment of a talented corporate executive to run the program
Establishment of specific program goals and objectives
Involvement of all levels of employees
Easy access to program and facilities
Incentives for participation
Respect and confidentiality
Focus on other areas in addition to fitness (smoking cessation, weight loss)
Adoption of a slow rate of progress (to discourage dropouts due to injury, pain, and fatigue) and
A corporate culture that encourages health promotion efforts

Numerous researchers have observed that those employees who most need to participate in fitness programs least often do so (Gebhardt & Crump, 1990; O'Leary, 1985; Settergen et al., 1983; Zavela et al., 1988). Others have found that substantial increases in program participation for specific sets of individuals, such as those with health risks, can be more vital and cost-effective than moderate increases in participation for all employees (Schott and Wendel, 1992; Glasgow and Terborg, 1988; Kahn, 1981; Kasl, 1984).

One of the key factors that emerges from the review of the literature is that success is very often measured by achievement of corporate objectives. Objectives may range from employee participation to increased morale, to improved productivity, and/or reduced medical costs. Success is achieved when clear objectives are established at the start of the program, investment is made to achieve the stated goals, and accurate measurement is built into the program.

Pelletier (1991) notes that in order to be effective, health promotion must be part of a comprehensive, integrated approach. A "comprehensive" program refers to a program that provides an ongoing, integrated program of health promotion and disease prevention that knits the particular components (e.g., smoking cessation, stress management, coronary risk reduction, exercise, etc.) into a coherent plan that is consistent with corporate objectives and includes program evaluation.

Finally, according to Shephard (1992), the degree to which a fitness program is endorsed or opposed by employee groups is also critical to program success.

Prevalence of Programs

The prevalence of work site health promotion programs has been the subject of many recent surveys. Although estimates vary, it is clear that such programs are popular and that their numbers have grown in recent years.

According to Shephard (1992), 18% of medium sized to large companies have programs with an exercise component. Fielding and Piserchia (1989) report that

the results from a national survey indicate that 66% of all work sites with more than 50 employees sponsor some type of health promotion activity. Bailey (1990) cites a 1990 survey by Hewitt Associates of nearly 1,000 employers which showed that 80% sponsor at least one wellness program for employees, with the most prevalent types of "behavioral" wellness programs being smoking cessation (63%), weight control (48%), and stress management (44%). As reported in the preceding section, 23.2% of responding police and sheriffs' departments in the POST program have some form of in-service program.

Figures presented by Fielding and Piserchia (1989) and Shephard (1992) regarding the most frequently cited categories of work site health promotion activities are shown in Table 11.

Program Costs

Private sector work site health and fitness program costs include promotion, facilities, equipment, and professional leadership. Many of these items are fixed costs, and the expense per employee is greatly affected by participation rates. In addition, clinical fitness testing and medical examination components are also included in many programs in both the private and public[17] sectors. Table 12 contains a range of costs for various components that may be included in clinical fitness and medical assessment components.

A common issue in the literature concerns the merits of developing an exercise facility at the workplace, relative to subsidizing exercise that takes place elsewhere, or encouraging walking and cycling to and from work. Arguments favoring an in-house location over a more distant facility include lower opportunity costs for the participant, a greater chance to develop corporate morale, peer support of participants, a potential to use existing publicity channels, and the possibility of getting needed labor from volunteers (Shephard 1986, 1986a).

Private sector work site health and fitness programs vary greatly in cost, from perhaps $200 to $2000 per participant per year (Patton et al., 1986; Shephard 1986, 1986a, 1989). In terms of their impact on absenteeism and health status, multimillion dollar facilities (Feuer, 1985; Hoffman and Hobson, 1984) are typically much less cost-effective than very simple programs (Boyd and Nielsen, 1989). However, according to some authors (Atherly et al., 1976; Morey, 1983), such programs may nevertheless achieve their unofficially intended objective of providing key executives with a substantial tax-free fringe benefit.

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[17] As discussed previously (see pages 3, 5, 7, 13 and Table 1) 61% of law enforcement agencies include a medical screening component and 70% of programs use some type of health-related fitness assessment, of which 36% are administered by outside consultants, clinics or hospitals.

Table 11

Frequency of Work Site Health Promotion Activities
(From Fielding and Piserchia, 1989; and Shephard, 1992)

Category	Fielding*	Shephard
Alcohol and drug abuse programs	Not reported	59%
Smoking control	35.6%	18%
Health risk assessment	29.5%	Not reported
Back problem prevention and care	28.5%	Not reported
Stress management	26.6%	23%
Exercise and fitness	22.1%	18%
Off the job accident prevention	19.8%	Not reported
Nutrition education	16.8%	28%
Personal counseling	Not reported	45%
Blood pressure control	16.5%	Not reported
Weight control	14.7%	Not reported

*Similar figures were reported by the Omaha-based Wellness Councils of America (WELCOA) in a 1990 survey (Bailey, 1990).

According to Shephard (1992), unsupervised walking and cycling are the least expensive forms of exercise since they can be built into the normal structure of the day, and because of low overall cost are likely to be the most cost-effective methods of inducing a given weekly energy expenditure (O'Donnell, 1987). Data from several Canadian studies (Canada Fitness Survey, 1983; Campbell, 1990; Canadian Chamber of Commerce, 1987) further indicate that such activities rate highly in terms of both current and likely future participation rates, and they have a demonstrated therapeutic effectiveness against the main long-term concern of the employer -- the loss of future production associated with premature cardiac disability or death (Morris et al., 1980).

Table 12

Range of Costs for Clinical Fitness and Medical Services[18]

Component		Cost Range
Paper Screening	Medical history questionnaire	$15-45
	Risk appraisal/lifestyle survey	$15-30
Blood Panel (Chem 23)		$20-40
Coronary Risk Lipid Panel		$10-30
CBC Blood Panel		$10-20
Urinalysis		$ 5-10
2-View Chest X-Rays		$30-80
3-View Lumbar Spine X-Rays		$45-100
Resting EKG		$30-60
Graded Exercise Test EKG (Treadmill)		$100-300
Body Composition:	Skinfolds	$15-30
	Hydrostatic (dunk tank)	$20-50
Upper and Lower Body Strength Tests		$25-50
Flexibility Testing		$20-40
Spirometry: FVC, FEV1 = Flow/Vol		$30-75

Conclusions

It is undeniable that certain health and fitness program interventions have a positive impact on health status (i.e., smoking cessation, hypertension control, and exercise programs). However, in order to show that work site programs are effective in improving health status, these programs must recruit those high risk individuals who could benefit most from the programs. Such individuals must enter and stay in the programs over the long-term if work site programs are to achieve their potential. The record is clear that health and fitness enthusiasts have not achieved this objective very well. Only about 20% of eligible employees enroll in work site programs, half drop out after three or four months, and those who remain

[18] These estimates were provided by Jim Merrill, a physiologist at Mt. San Antonio College.

are generally individuals who would pursue a positive lifestyle with or without the work site program.

The literature contains several critical reviews showing that most, if not all studies conducted on work site health and fitness programs do not meet minimum acceptable standards of scientific inquiry. This lack of research quality, however, has not deterred companies from adopting work site programs. Estimates based on large scale surveys indicate that as many as 80% of U.S. companies have implemented some form of program.

Despite the lack of rigor, it appears that the short-term benefits of work site health and fitness programs more than match their costs. Reductions in absenteeism and health care costs (due to decreased injury and illness) are typically reported within a short time after program implementation. Whether this effect continues over the long-term is largely unknown. Few acceptable longitudinal studies have been conducted to date. Prominent health economists warn that a widespread change to healthier lifestyles may have a serious impact on pension systems and that because of the high costs of operating large scale health and fitness facilities, only the simplest of low-cost programs are likely to yield long-term gains.

From a research standpoint, other areas of potential benefit have suffered from serious measurement and or methodological problems and will likely continue to prove difficult to analyze in the future. These areas include: psychological well being, stress tolerance, productivity and health care cost containment. The hope is that improved research methods will evolve through which anticipated benefits in these areas can be clearly demonstrated.

REVIEW OF STATUTORY AND CASE LAW

Agencies considering adoption of an in-service fitness program need to be aware of several legal issues. The following review highlights these issues and includes references to pertinent case law decisions. The review is organized into four major areas: agency liability for the actions of officers whose physical training is not adequate; protections offered to fitness program participants under federal and state nondiscrimination in employment laws; workers' compensation for program-related injuries; and the impact of collective bargaining requirements on work site fitness programs.

Agency Liability for Actions of Unfit Officers

The duty to recognize and uphold the Constitutional rights, privileges, and immunities of others is imposed on police officers and other criminal justice practitioners by Section 1983 of Title 42 of the U.S. Code, which reads:

> Every person who under color of any statute, ordinance, regulation, custom, or usage of any state or territory, subjects, or causes to be subjected, any citizen of the United States or any other person within the jurisdiction thereof to the deprivation of any rights, privileges, or immunities secured by the Constitution and laws, shall be liable to the party injured in an action at law, suit in equity, or other proper proceeding for redress.

In Parker v. District of Columbia,[19] a case brought under Section 1983, the United States Court of Appeals for the District of Columbia affirmed a nearly half-million dollar jury verdict against the District of Columbia for injuries caused, in part, by inadequate training programs in *physical fitness* and in *disarmament techniques.* The theory supporting liability was inadequate training. The proposition underpinning the theory of liability was that an officer who was reasonably physically fit and properly trained in the use of non-deadly force would not have had to resort to deadly force in the circumstances of that case. In this case, a District of Columbia officer shot Parker twice when, during a scuffle, Parker moved in such a way that the officer concluded that he was probably reaching for a gun. In fact, there was no gun. An expert witness (a former federal law enforcement officer) testified, and the jury found, that the officer should have been able to handle Parker effectively without shooting him. The District of Columbia had provided no physical fitness training to the officer during the four years preceding the incident. According to the U.S. Court of Appeals:

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[19] Parker v. District of Columbia (850 F.2d 708 (D.C. Cir. 1988).

> Officer Hayes simply was not in adequate physical shape. This condition posed a foreseeable risk of harm to others. We are persuaded that a fair minded jury could have concluded that Officer Hayes' conduct was the result of a deliberate indifference on the part of the District with respect to the physical training of its police officers.

This "deliberate indifference" to important training needs was found to be a "policy" or "custom" of the District of Columbia sufficient to expose the District to municipal liability for the officer's use of excessive force, which deprived Parker of his Fourth Amendment right not to be seized with unreasonable force.[20]

In a more recent landmark case (City of Canton v. Harris),[21] the U.S. Supreme Court affirmed the use of inadequate police training as a basis for Section 1983 actions. The Court held that inadequate police training may form the basis for a civil rights claim "where the failure to train amounts to deliberate indifference to the rights of persons with whom the police come in contact."

Thus, law enforcement agencies that ignore the physical training of their officers may be held liable if their officers injure anyone as a result of inadequate physical training.

In-Service Fitness Programs and Nondiscrimination in the Workplace

There are several federal and state statutes that prohibit discrimination in the workplace. Discrimination on the basis of race, color, religion, sex and national origin is prohibited by the Civil Rights Act of 1964, the Equal Employment Opportunity Act of 1972, and the Civil Rights Act of 1991. Discrimination on the basis of age is prohibited by the Age Discrimination in Employment Act (ADEA) of 1967. Persons with mental or physical disabilities are protected by the Rehabilitation Act of 1973 and the Americans with Disabilities Act (ADA) of 1990. In addition to these federal statutes, California's Fair Employment and Housing Act provides similar, and in many cases higher levels of protection from discrimination than do the federal statutes.

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[20] It is noted that the decision in Parker may have turned on alleged improper jury instructions caused when the trial court judge failed to instruct the jury to weigh officer Hayes' actions in light of the standard established by the Supreme Court in Tennessee v. Garner [471 U.S. 1, S.Ct 1964(1985)]. Briefly, the jury believed that Hayes should have "observed a gun in Parker's possession" before resorting to the use of deadly force. As indicated, Parker had no gun. The proper instruction, per Tennessee v. Garner is that an officer is justified in using deadly force when he or she has reasonable belief that the suspect is armed or poses a threat of serious physical harm either to the officer or to others. The record in the case clearly showed that Hayes had this perception. Counsel for the defendant District did in fact object to the instructions, but because they failed to do so in the manner prescribed by court rules, the trial court judge did not change the jury instructions.

[21] City of Canton v. Harris, 109 S.Ct. 1197 (1989).

All of these statutes have a bearing on the implementation of an in-service physical fitness program. A discussion of each follows.

Civil Rights Act of 1964 and the Equal Employment Opportunity Act of 1972

The establishment of an in-service fitness program, requires careful consideration to the types of standards, if any, that will be set, and the consequences, if any, for failure to achieve the standards. It is only through the consequences associated with various levels of program success or failure that Title VII comes into play. If there are no standards, sanctions or consequences, then there are no actions that can be taken which could adversely affect one's job status. On the other hand, if there are program goals or standards which have consequences for any term or condition of employment (either positive or negative), then Title VII becomes relevant.

Title VII of the Civil Rights Act of 1964 provides that:[22]

> It shall be an unlawful employment practice for an employer . . . to fail or refuse to hire, or discharge any individual or otherwise to discriminate against any individual with respect to his compensation, terms, conditions, or privileges of employment, because of such individual's race, color, religion, sex or national origin. . .

The Equal Employment Opportunity Commission (EEOC) is the regulatory agency responsible for enforcing Title VII. In 1970, and again in 1978, the EEOC, in conjunction with other federal agencies, issued a set of guidelines entitled the "Uniform Guidelines on Employee Selection Procedures," which have been accorded "great deference" by the U.S. Supreme Court, and which constitute the basic interpretation of the requirements of Title VII as it applies to state and local government.[23]

Under the Uniform Guidelines, any employment practice which discriminates against members of a protected group defined by race, religion, color, sex, or national origin, is illegal unless the practice is job related and consistent with business necessity. Discrimination can be either intentional or unintentional. Unlawful intentional discrimination occurs when members of a protected group are intentionally treated differently from members of another similarly situated group on the basis of the protected status.[24] An example would be if female officers but not

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[22] As amended by the Equal Employment Opportunity Act of 1972.

[23] California's Fair Employment and Housing Act incorporates these Guidelines by reference (California Administrative Code, Div. 4., Section 7287.4(a)).

[24] The employer making the decision to treat a protected group differently from another group must do so intentionally on the basis of the protected status in order for the treatment to

male officers were periodically required to demonstrate a certain type of physical fitness (e.g., upper body strength) in order to maintain employment or to receive "bonus pay." Another frequently used term for intentional discrimination is discrimination due to "disparate treatment."

Unintentional discrimination occurs when an employment practice which is neutral on its face, has an adverse or disparate impact on members of a protected group. An example of discrimination due to adverse impact would be use of a fitness test which is "passed" by significantly fewer female officers than male officers.[25]

As mentioned previously, under Title VII, if an employment practice discriminates on the basis of either disparate treatment or disparate impact, the employer must show that the practice is job related and consistent with business necessity. Failure to do so results in a finding of illegal discrimination.

Under the Uniform Guidelines, there are three types of evidence that can be presented to demonstrate that an employment practice is job related. They are known as (1) content validity, (2) criterion-related validity, and (3) construct validity.[26] The requirements for demonstrating each of these types of validity are quite arduous. A fourth strategy, referred to as "rational validity" has also been accepted by the courts.[27]

The type of validation evidence that is necessary and appropriate to demonstrate job relatedness depends on the nature of the employment practice. With regard to validity, two different approaches to fitness and fitness testing have traditionally been used in law enforcement fitness programs, and these two different approaches call for different types of validation evidence. The two approaches to assessment are generally known as Task Simulation Testing and Physical Ability Testing.

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constitute unlawful intentional discrimination.

[25]Adverse or disparate impact is defined in the Uniform Guidelines as occurring when the passing rate for a protected group is less than four-fifths, or 80%, of the passing rate of the most successful group; thus, if 100% of males passed a particular fitness test, and less than 80% of females passed the same test, then the test would be considered to have adverse impact against females. Similarly, if 70% of males passed a particular fitness test, then at least 56% of females would need to pass the test in order to avoid a charge of adverse impact (80% X 70% = 56%).

[26] Criterion-related validity, a procedure that relies on statistics to show how one measurement, such as an ability test, predicts another measurement, such as future job performance, is also a component of construct validity.

[27] The Uniform Guidelines also recognize that there are circumstances in which test users cannot or need not utilize the validation techniques endorsed by the guidelines and caution that, in such situations, the user should either modify the procedure to eliminate adverse impact or "otherwise justify continued use of the procedure in accord with Federal law." (Section 1607.6B(2)

Task Simulation Testing - Content Validity. As its name implies, this type of test simulates actual job tasks. It requires examinees to demonstrate that they can perform the particular tasks that are simulated in the tests. Critical to the development of this type of test is recent job analysis information which demonstrates that the tasks simulated are in fact important tasks and/or essential job functions which all incumbents must be able to perform in order to successfully perform the job.[28] This type of test procedure is typically supported on the basis of content validity -- the term "content validity" refers to the requirement that the content of the test reflects or matches the content of the job. While the concept itself is straight forward, the actual steps involved in carrying out a content validity study, as outlined in the Uniform Guidelines, are quite complex (Major City Chiefs Association et al., 1993).

Physical Ability Testing - Criterion-Related Validity. Physical ability testing refers to the practice of identifying and measuring the abilities one needs in order to perform physically demanding job tasks. Physical abilities testing methods have been around since about 1964 when Edwin Fleishman and his colleagues first published the results of research they conducted for the U.S. Navy in which they developed nine factors (or physical constructs) that statistically predicted how well individuals performed certain physically demanding job tasks (Fleishman, 1964). Examples of the constructs that Fleishman identified include stamina, dynamic strength, static strength, trunk strength, dynamic flexibility, and gross body coordination. Another example of a physical ability construct is cardiovascular endurance (i.e., aerobic capacity).

Based on the work of Fleishman and others, there is substantial evidence to support the existence of different physical ability constructs. In order to show that tests of these constructs (i.e., physical ability tests) are job-related, it is necessary to show that test performance is related to some aspect of job performance. Normally this is accomplished in what is called a "criterion-related validity study." This type of study requires that the test (or measure) of the ability be compared to one or more measures of the job tasks for which the ability is presumed to be necessary. This usually requires that the ability test be administered to a sample of individuals who are (or will be) performing the job tasks and that these same individuals be measured in terms of how well they actually perform the job tasks. The test is said to have criterion-related validity to the extent that scores on the test are empirically related (i.e., correlated with) scores on the job task measures. When such a relationship occurs, the ability test under consideration can be said to be job-related.[29]

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[28]The Uniform Guidelines explicitly require a job analysis as part of each of these three validation strategies, i.e., "Content," "Criterion-related," and "Construct" validity.

[29]An argument favoring task simulation tests (i.e., work sample tests) is that it is relatively easy to show that the contents of the tests are essential job functions and/or tasks. Physical ability tests, on the other hand, require a statistical showing that what is being measured is in fact related to the performance of essential job functions and/or critical work tasks. Proponents of physical

Thus, the importance of the Civil Rights Act of 1964, as amended, is that any type of fitness program standard which: (1) is related to a condition or term of employment, and (2) results in either disparate treatment or disparate impact of members of a protected group, as defined by race, religion, color, sex, or national origin, must be shown to be job-related. Furthermore, as described above, the methods of demonstrating job-relatedness are very specifically prescribed, and differ depending upon the nature of the standard.

Civil Rights Act of 1991

The Civil Rights Act of 1991 offers protections to the same groups articulated in Title VII (i.e., groups defined by race, religion, etc.), and was passed largely in response to a number of Supreme Court decisions that were perceived by many as undermining the intent of Title VII. Of particular relevance to in-service physical fitness programs is Section 106 of the Act, which adds the following subsection to the 1964 Civil Rights Act:

> (1) It shall be an unlawful employment practice for a respondent, in connection with the selection or referral of applicants or candidates for employment or promotion, to adjust the scores of, use different cutoff scores for, or otherwise alter the results of, employment related tests on the basis of race, color, religion, sex or national origin.

This section has been interpreted to mean that it is unlawful to set different standards on physical fitness tests based on gender norms. This prohibition is most significant with respect to physical abilities tests, such as those described previously, which often have separate norms based on gender and/or age. It is also noteworthy that the prohibition is absolute, i.e., separate standards may not be used under **any** conditions (employers may not present job-relatedness evidence to substantiate the use of separate standards).

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abilities tests claim that the tests measure abilities that are required for a larger number of physically demanding job tasks, and are also related to health and well being. Cardiovascular endurance for example, is believed to be necessary to perform a number of tasks, such as subduing and arresting a resisting suspect, and pursuing a suspect on foot. Proponents of physical abilities tests also point out that measuring cardiovascular endurance not only addresses an ability that is needed in many aspects of police work, but that it is also related to one's health status such as decreased likelihood of coronary heart disease. Proponents compare this multiple task and health focus to work sample tests batteries which contain only a handful of job task simulations which do not embrace the larger health issue.

Americans with Disabilities Act (ADA)

The federal Americans with Disabilities Act (ADA) was enacted in 1990 to secure the rights of disabled individuals.[30] Title I of the ADA prohibits discrimination against qualified individuals with disabilities[31] in *all* aspects of employment, including training, compensation, advancement opportunity, and other benefits and privileges of employment. A detailed discussion of the ADA and its effect on law enforcement employment practices can be found in The Americans with Disabilities Act: Questions and Answers, published by POST in May, 1995. Guidelines for conducting pre-employment medical screening in compliance with the ADA can be found in the POST Medical Screening Manual for California Law Enforcement (July, 1994).

Whether voluntary or mandatory, an in-service fitness program would be considered a condition, benefit, or privilege of employment and therefore must be conducted in accordance with the stipulations of the ADA. The specific impact of the ADA on these programs is fourfold:

- it delimits the type of medical inquiries and examinations that can be conducted on employees;
- it requires strictly confidential treatment of all medical information collected;
- it requires the ability to prove that any part of a mandatory fitness program that is found to have an adverse impact on an employee with a disability is job-related and consistent with business necessity;
- it mandates employers to provide equal access and, if necessary, reasonable accommodation to disabled employees to allow them to participate and benefit from either a voluntary or mandatory fitness program.

Medical Inquiries and Examinations. The ADA has strict stipulations dictating the types of medical inquiries that can be made of individuals at all stages of employ-

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[30]An individual is disabled under the ADA if that person has a physical or mental impairment that substantially limits one or more major life activities, has a record of such impairment, or is regarded or perceived as having such an impairment, even if he/she does not actually have it. Generally, a person is disabled if the person has any physiological disorder, condition, cosmetic disfigurement, anatomical loss, or mental or psychological disorder that makes the individual unable to carryout major life activities such as caring for him- or herself, performing manual tasks, walking, seeing, hearing, speaking, breathing, learning, or working to the same extent as the average person.

[31]A qualified individual with a disability is a person who meets legitimate skill, experience, education, or other requirements of an employment position and who can perform the "essential functions" of that position with or without reasonable accommodations (see page 38).

ment. For example, no medical inquiries can be made of applicants prior to making a conditional offer of employment. After a conditional offer is extended, candidates may be administered a full medical examination; however, any rejections based on medical findings must be shown to be a result of the individual's inability to perform one or more essential job functions (with or without reasonable accommodation).

The ADA's requirements concerning medical examinations and inquiries of employees are more stringent than those affecting post-offer candidates. In order for a *mandatory* medical examination or inquiry to be made of an employee, it must be job related and consistent with business necessity. Legitimate reasons for such an examination would include the need to determine whether individuals in physically demanding jobs continue to be fit for duty. Therefore, it is highly likely that the collection of general measures of physiological fitness (e.g., blood pressure) could be justified by showing the need for officers to be able to run, jump, subdue combative subjects, and perform other physically demanding tasks. On the other hand, subjecting officers to a yearly HIV test would not be considered sufficiently job-related, and as such would be an unlawfully invasive inquiry.

The ADA does permit employers to conduct *voluntary* medical examinations and inquiries as part of an employee health program, providing that:

- participation in the program is voluntary;
- information obtained is maintained according to the confidentiality requirements of the ADA (see below); and
- the information is not used to discriminate against an employee.

Confidential Treatment of Medical Information. The ADA imposes very strict limitations on the treatment of employee medical information. All medical information must be collected and maintained on separate forms, in separate medical files and must be treated as a confidential medical record. No medically-related information should be placed in the employee's personnel file. The only individuals who should have access to these records are:

- First aid and safety personnel who may be informed, when appropriate, if the disability might require emergency treatment;
- Supervisors and managers who may be informed regarding necessary restrictions on the employee's work and duties and necessary accommodations;
- Government officials investigating compliance with the ADA;
- Representatives of insurance companies who require a medical examination to provide health or life insurance for employees; and

- State workers' compensation fund employees or those representing "second injury" funds, in accordance with state workers' compensation laws.

Although medical information obtained before January 26, 1992 is not restricted by the ADA's confidentiality restrictions, state law has required the confidential treatment of such information since 1981. Under the California Confidentiality of Medical Information Act, each employer who receives medical information is required to establish appropriate procedures to ensure the confidentiality and protection from unauthorized use in disclosure of that information, which includes:

- keeping the information in a secure filing system;
- controlling access to the filing system to those who have a need to know and a right to know; and
- refraining from disclosing (in any manner, including informal discussion) any protected information about any individual participant unless specifically authorized to do so by the participant.

Proof of Job-Relatedness and Business Necessity. If any element of a mandatory in-service fitness program serves to discriminate against an individual with a disability, it must be shown to be job-related and consistent with business necessity. For example, if an agency included a five-mile run in its in-service fitness program, and withheld a benefit (or sanctioned) an officer who could not run this distance due to a physical disability, the agency would need to show that it was a bona fide essential job function[32] in order to be in compliance with the ADA.

Note that, in the eyes of the ADA, discrimination can take many forms, including failure to make programs or services accessible to disabled individuals, denying fringe benefits attained by participation in certain programs, or imposing punitive or remedial actions on disabled individuals who do not achieve success during such programs.

It is equally important to note, however, that in-service fitness programs for physically demanding jobs (especially jobs that have public health and safety implications) are not only allowed by the ADA, but serve as an effective means of avoiding the legally vulnerable practice of maintaining stringent fitness standards for applicants, but failing to ensure that these levels are maintained once individuals are placed on the job. Therefore, the institution of an in-service fitness program can lend validity to an agency's entry-level qualification standards.

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[32]A discussion of essential job functions is found in the POST Americans with Disabilities Act: Questions and Answers (May, 1995).

Reasonable Accommodation and Equal Access. Even if a component of an in-service fitness program is job-related and consistent with business necessity, an employee whose disability prevents participation in the program must be asked whether he or she needs a *reasonable accommodation*. A reasonable accommodation might include allowing the officer to wear a special brace during participation, or perhaps offering another way to demonstrate a specified aspect of fitness. For example, if a fitness program were to include a running component to measure cardiovascular conditioning, an officer with a knee problem might be offered the opportunity to ride a bicycle rather than run in order to demonstrate this same aspect of fitness. On the other hand, *if* the purpose of a running component was to ensure that officers can actually run the distances demanded by their essential job functions, replacement of the running component of the program would *not* be considered reasonable, since it would subterfuge the purpose of that portion of the program.

Even if an in-service fitness program is voluntary, employees with disabilities must have an equal opportunity to attend and participate. However, it is not necessary to alter or eliminate these programs simply because an employee cannot participate due to a disability.

Weight Standards. Challenges to weight standards for police officers have, in general, been successfully defended on the basis of their "rational" relationship to the protection of persons and property. Much of the case law foundation supporting the use of weight standards has actually developed as a result of challenged "grooming" standards.

In Kelly v. Johnson (1976),[33] for example, a police officer argued that his department's regulation requiring male officers to maintain neat and trimmed hair and prohibiting beards (except for medical reasons) violated his 14th amendment personal liberty rights. In ruling for the department, the Supreme Court decided that "the desire to make police officers readily recognizable to members of the public, or the desire for the esprit de corps which such similarity is felt to inculcate within the police force itself . . . (provide) sufficiently rational justification (for rules regarding hairstyles)" and presumably other grooming issues.

According to McCormack (1994), "Since Kelly, police agencies have been granted wide latitude by the courts in determining the constitutionality of a variety of restrictions placed on officers. In addition to grooming standards, courts reviewing constitutional challenges to secondary employment restrictions, residency requirements, sick leave usage and anti-nepotism regulations have generally held that as long as police agencies have a legitimate, non-arbitrary reason for the rule or regulation, that it will survive constitutional scrutiny under a rational basis analysis. In general, courts have uniformly upheld grooming standards on such grounds as the development of 'shared pride,' easy recognition of police by the

[33] Kelly v. Johnson, 425 U.S. 238 (1976).

public, and safety of an officer in a struggle. Courts would be likely, however, to require departments imposing weight standards for the first time to phase them in over a reasonable period of time to allow overweight officers a medically safe time to comply."

Weight Standards and the ADA. Prior to the advent of the ADA, most courts held that overweight employees were not considered "disabled" and therefore not protected by either state or federal discrimination statutes. For example, in a 1991 case tried under the federal Rehabilitation Act of 1973,[34] a circuit court determined that a police captain who weighed in excess of 300 pounds was not protected since there was no medical reason why he couldn't lose weight. Similarly, in a California case,[35] the state court agreed that body-weight limitations on City of Los Angeles firefighters and paramedics was a reasonable means of insuring the health and safety of the city's emergency personnel and the public, thereby rejecting a claim that the standard violated state anti-discrimination laws. In fact, as recently as 1993, the California Supreme Court decided that obesity was **not** a disability under the state Fair Employment and Housing Act **unless** it resulted from a physiological condition affecting one or more of the basic bodily systems and limiting a major life activity.[36]

However, in a 1993 *federal* case,[37] this one tried under the Americans with Disabilities Act, obesity **was** in fact found to constitute a protected disability. In their ruling, the First Circuit Court of Appeals upheld a claim by a nurse that she was illegally rejected for employment as an institutional assistant because of her weight. She had worked successfully as an institutional assistant in the same mental health institution on two prior occasions. However, her third application for the same position was rejected when the institution concluded that her morbid obesity compromised her ability to evacuate patients in case of an emergency and put her at greater risk of developing serious medical problems. As in the police captain case cited above, the employer claimed that the nurse was not disabled because she had control and therefore responsibility for her own obesity; nevertheless, in this instance the court rejected this claim, citing that other conditions protected by the ADA, such as alcoholism, AIDS, and diabetes, also implicate voluntary conduct.

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[34] Johnson v. City of Tarpon Springs, 758 F.Supp. 1473 (M.D. Fla. 1991).

[35] Hegwer v. Board of Civil Service Commissioners of Los Angeles, 7 Cal. Rptr.2d 389, 395, footnote 10 (Cal.App.2Dist. 1992).

[36] Cassista v. Community Foods, Inc., 5 Cal.4th 1050 (1993).

[37] Cook v. State of Rhode Island Dept. of MHRH, 10 F.3d 17 (1st Cir. 1993).

In March 1995, the EEOC incorporated this appeals court's interpretation of obesity in a new section of their Compliance Manual[38] dealing with the definition of the term "disability." In this section, the EEOC states that *severe obesity*, defined as "body weight in excess of 100% above normal weight," is to be considered a protected impairment. In addition, individuals who are overweight to *any* degree as the result of an underlying physiological disorder (e.g., hypertension or thyroid disorder) are also considered to have a medical disability.

In summary, although the use of weight standards generally appears to be lawful, if such a standard serves to discriminate against an employee who is found to be disabled due to obesity, the employer must be prepared to show that the standard is job related and consistent with business necessity. Therefore, it would be prudent for agencies to use performance-based standards rather than (or in addition to) simple weight standards as a means of ensuring that their officers are physically able to perform all the essential functions of the job that could be negatively affected by excessive weight.

Age Discrimination in Employment Act (ADEA)

The Age Discrimination in Employment Act of 1967 (ADEA) provides protection to persons over age 40. In 1974, Congress amended the ADEA to specifically cover employees of state and local governmental bodies, thereby applying the ADEA for the first time to the bulk of law enforcement officers.

The relevant portions of the ADEA provide as follows:

> It shall be unlawful for an employer --
>
> (1) to fail or refuse to hire or to discharge any individual or otherwise discriminate against any individual with respect to his compensation, terms, conditions, or privileges of employment, because of such individual's age;
>
> (2) to limit, segregate, or classify his employees in any way, which would deprive or tend to deprive any individual of employment opportunities or otherwise affect his status as an employee, because of such individual's age.[39]

The import of the ADEA on in-service fitness programs is twofold. First, just as any provision of a fitness program that adversely affects a condition of employment for persons from a protected group as defined by race, etc., can be challenged on the basis of one of the previously discussed federal statutes, any provision of a fitness program that adversely affects a condition of employment for someone over 40 can be challenged on the basis of the ADEA. The "burden of

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[38] Equal Employment Opportunity Commission. 1995. Compliance Manual Section 902: Definition of the Term Disability.

[39] Title 29, Section 623(a), United States Code.

proof" for the employer is likewise the same -- showing that the program goal or standard is job related and a business necessity.

The other major implication of the ADEA for in-service fitness programs is related to the provisions of the ADEA with respect to mandatory retirement based on age. Under the ADEA, a two-part test is used to evaluate the legality of mandatory retirement ages. First, the employer must prove that any qualification used to justify a mandatory retirement age is reasonably necessary to its business. If this test is met, the employer must also prove that substantially all employees over the mandatory retirement age lack the qualifications for the job, or that it is impossible or impractical to deal with employees on an individualized basis.[40]

Law enforcement (and fire protection) agencies which had a maximum entry or retirement age in effect as of March 3, 1983 were granted a temporary exemption from this two-part test. However, the exemption expired December 31, 1993, and although law enforcement is actively seeking restoration of the exemption, it has not been legislated. Furthermore, a Congress-funded study of age requirements in law enforcement concluded that law enforcement officials could use less discriminatory alternatives to age requirements, such as physical agility tests and medical examinations, to determine fitness for duty. The study recommended against using age as a bona fide occupational qualification (BFOQ).[41,42]

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[40] Western Air Lines v. Criswell, 472 U.S. 400, 410-412 (1985).

[41] Specific conclusions of the study (Landy, 1992) were:

- Only a fraction of the tasks performed by public safety officers involve public safety.
- The actual frequencies with which public safety tasks are performed is low.
- Distinctions between "actual" and "potential" public threat indicate that it is not always true that failure to perform a given task will result in injury, only that it might -- e.g., inability to "take a suspect down" may or may not result in injury to the officer or others.
- It is unlikely that the public will have to depend on the abilities of only one officer to perform a public safety task.
- The risk of experiencing a catastrophic medical event that would compromise public safety is so small as to eliminate this factor in the debate regarding age-based retirement.
- Accumulated deficits in abilities are only marginally associated with chronological age and can be documented with available tests that are better predictors than age.
- Medical and ability tests for individual retirement decisions can be shown to be reliable, valid, and job-related using existing testing technology.

The study distinguished between medically-based retirement and age-based retirement, and noted that with regard to the former, there is no problem identifying the threat since the symptoms are

The significance of the loss of the exemption for law enforcement is that on the one hand agencies can and have been held civilly liable for hiring and retaining officers who are not physically capable of performing their sworn duties, and on the other hand, a tool that has traditionally been used by many law enforcement agencies to avoid employment of such persons (namely, age restrictions on either hiring or retention), is no longer available. As a result, in the future there is likely to be an increased reliance on periodic medical and fitness assessments to determine officers' physical and mental readiness to perform essential duties. Furthermore, if challenged, employment decisions based on the results of such assessments must be shown to be job-related.

A number of ADEA challenges to mandatory retirements ages for law enforcement officers have been adjudicated, with the majority of cases resulting in rulings against the employer. These cases are summarized in Appendix E.

In-Service Programs and Workers' Compensation

As reported in the survey results section of this report (see pages 12-13), 44% of the California law enforcement agencies with in-service programs have experienced one or more program-related injuries. Some of the injuries have been very serious, and in several agencies program-related injuries have been sufficiently costly to cause the program to be either curtailed or greatly modified.

Also as reported in the survey results, there were four reported challenges to workers' compensation claims that were filed in conjunction with a program -- all of which were overturned. Consistent with these findings, a review of the pertinent statutory and case law leaves little doubt that injuries sustained while directly

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direct evidence of incapacitation, whereas the latter is more problematic in that the challenge is to predict who among asymptomatic individuals will likely experience major medical catastrophic events that will result in sudden incapacitation and, consequently, jeopardize the public safety.

[42]In order to satisfy the BFOQ test, one of the following two conditions must be met:

(1) All or almost all of the individuals above a designated (retirement) age cannot perform in a manner reasonably necessary for effective job behavior; or

(2) Some of the individuals above a designated (retirement) age cannot perform in a manner reasonably necessary for effective job behavior and there is no alternative available (i.e., variable other than chronological age).

participating in a program will be covered by worker's compensation -- whether or not participation is voluntary or mandatory.

Less clear is what activities constitute "participation" in a program, and therefore are compensable. The applicable statute is Labor Code Section 3600, which provides in part:

> (a) Liability for the compensation provided by this division . . . shall, without regard to negligence, exist against an employer for an injury sustained by his or her employees arising out of and in the course of the employment . . . in those cases where the following conditions of compensation concur: . . .
> (9) Where the injury does not arise out of voluntary participation in any off-duty recreational, social, or athletic activity not constituting part of the employee's work-related duties, except where these activities are a reasonable expectancy of, or are expressly or impliedly required by, the employment. The administrative director shall promulgate reasonable rules and regulations requiring employers to post and keep posted in a conspicuous place or places a notice advising employees of the provisions of this subdivision. Failure of the employer to post the notice shall not constitute an expression of intent to waive the provisions of this subdivision.

As explained in Ezzy v. Workers' Comp. Appeals Board,[43] and Hughes Aircraft Co. v. Workers' Compensation Appeals Board,[44] the Legislature's intent in enacting section 3600, subdivision (a)(9), was to eliminate from workers' compensation coverage injuries sustained during recreational, social, or athletic activities which are only remotely work-related. The purpose of the legislation was to insure that employers could provide voluntary off-duty recreational, social, and athletic benefits for their employee's personal use without also bearing the expense of insuring the employee for workers' compensation benefits during participation in those activities.

In Ezzy v. Workers' Compensation Appeals Board, supra, the court further explained that the test of "reasonable expectancy of employment" consists of two elements: (1) whether the employee subjectively believes his or her participation in an (athletic) activity is expected by the employer, and (2) whether that belief is objectively reasonable.

Several cases involving injuries sustained during voluntary athletic or fitness activities have clarified these issues. In Taylor v. WCAB,[45] the California Court of Appeals ruled that a police officer was not entitled to workers' compensation for a lunchtime injury sustained while playing basketball. The officer maintained that as

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[43] Ezzy v. Workers' Comp. Appeals Bd. (1983) 146 Cal. App. 3d 252.

[44] Hughes Aircraft Co. v. Workers' Comp. Appeals Bd (1983) 149 Cal.App. 3d 571, 574-575.

[45] Taylor v. WCAB (C.A. 1st, No. A038659).

a member of the city's hostage negotiating team, he was expected to keep himself in shape. The court found that the officer's belief that he was expected to participate in the basketball game to keep himself in shape was not objectively reasonable: The city did not require him to participate in the game to stay in shape, the basketball game was not an approved activity for workers' compensation purposes, and the city had announced that compensable injuries would be limited to those sustained while engaged in training programs and athletic activities that were approved in advance. In ruling against Taylor the court said:

> Where an employer expects employees to participate in recreational or athletic activities to maintain certain standards of physical fitness necessary for performance of their work, we think it reasonable to allow the employer to limit its liability for workers' compensation to injuries sustained in designated and pre-approved athletic activities as the city of Berkeley Police Department did in this case. To hold otherwise would in effect render the employer potentially liable for any injury sustained in any recreational or athletic activity if the activity contributed to the employee's physical fitness. Such broad potential liability would be contrary to the legislative intent of section 3600, subdivision (a)(9).

In Todd v. WCAB,[46] the California Court of Appeals ruled that a worker was not entitled to workers' compensation for an injury sustained while playing basketball during the worker's uncompensated lunch break on his employer's premises.

David Todd was employed by Retech Inc. While playing basketball with his co-workers on Retech premises during the lunch hour, Todd injured his left knee. Participation in the game was voluntary. Although some material used in the game was owned by Retech and Retech provided the premises, employees provided the equipment and were not paid for the time off for lunch. Todd sought workers' compensation benefits. A workers' compensation judge denied benefits. The Workers' Compensation Appeals Board denied reconsideration, and the Court of Appeals affirmed.

The appellate court rejected Todd's contentions that he was not "off-duty" at the time of the injury and that he was therefore entitled to compensation under the personal comfort or convenience doctrine. Under this doctrine, certain acts necessary to the "life, comfort and convenience" of the employee while at work do not break the course of employment for workers' compensation purposes. The doctrine did not apply here because it was inconsistent with the test for coverage under Section 3600.

The court also determined that there was no substantial evidence that Todd reasonably believed he was expected to participate in basketball games during his lunch break, or that participation was expressly or impliedly required by the employment. Even though the employer apparently condoned the activity on the

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[46] Todd v. WCAB (C.A. 1st, No. A037377, February 18, 1988)

premises, none of Todd's testimony indicated that he thought the employer expected him to participate in the basketball games, and there was no evidence that the employer required, encouraged, or sponsored the recreational activity. Accordingly, under Section 3600, subdivision (a)(9), the petitioner was not entitled to workers' compensation.

In the most recent case of note, the First District Court of Appeals concluded in Kidwell v. WCAB, that an injury sustained by a California Highway Patrol officer while practicing at home for an annual physical fitness test given by her employer was compensable under state workers' compensation laws.[47] Kidwell ruptured the ligaments of her right thumb while practicing the standing long jump at home. The jump is required as part of the CHP's annual fitness test. Failing the test does not affect an officer's job security, but does result in loss of eligibility for a salary differential, and certain assignments and overtime programs. Those who fail the test are also issued a "fitness plan" to begin the "retest cycle."

Kidwell's injury required surgery and caused her to take 58 hours of sick leave. The CHP denied Kidwell compensation on the basis that she sustained the injury while engaged in an off-duty activity not expressly pre-approved as part of her "fitness plan." At the time of the injury Kidwell's approved fitness plan contained a document, signed by Kidwell, indicating that only injuries sustained as part of the approved fitness plan would be covered by workers' compensation.

In concluding that the test was not a "minimum job standard," but was "job related," the court concluded that: "The employee's subjective belief, that as a condition of her employment, she was required to practice for the test, is objectively reasonable."

In-Service Programs and Collective Bargaining

The implementation of health and fitness programs by local law enforcement, public entity employers is governed by the Meyers-Milias-Brown Act (MMBA),[48] which regulates labor relations for local government employees. Implementation of such programs is subject to the MMBA's requirement that the employer and employees meet and confer in good faith over the terms and conditions of employment.

The MMBA's stated purpose is to provide "a reasonable method of resolving disputes regarding wages, hours, and other terms and conditions of employ-

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[47] Kidwell v. Workers' Compensation Appeals Board et al. [4-3-95] A067258 [1st Dist.] - Cal.App.4th- DlymJrnl.DAR 42390.

[48] Government Code Section 3500 et seq.

ment . . ."[49] Its principal means for doing so is by imposing on public agencies the obligation to "meet and confer in good faith regarding wages, hours, and other terms and conditions of employment with representatives of recognized employee organizations . . ."[50]

Local law enforcement peace officers are expressly covered by the MMBA.[51] Given that mandatory and voluntary health and fitness programs generally have positive or negative financial incentives affecting wages, such programs would be subject to the meet and confer requirement of the Act.

The duty to meet and confer in good faith has been construed as a duty to bargain with the objective of reaching binding agreements between agencies and employee organizations over the relevant terms and conditions of employment. The duty to bargain requires the public agency to refrain from making any unilateral changes in employees' wages and working conditions until the employer and employee association have bargained to impasse; this duty continues in effect after the expiration of any employer-employee agreement.[52]

If the employer and the employee organization bargain in good faith but reach impasse, the MMBA contains no clear mechanism for resolving disputes. It merely provides that if the parties fail to reach an agreement, they may agree to appoint a mediator or use other impasse resolution procedures agreed upon by the parties, such as arbitration.[53]

Conclusions

Law enforcement agencies can and have been held liable for injuries to others as a result of officers not being in adequate physical condition.

Any injury sustained by an officer who participates in an agency-sponsored program is covered by workers' compensation, regardless of whether the program is voluntary or mandatory, and regardless of whether the injury occurs on duty or

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[49] Ibid.

[50] Government Code Section 3505.

[51] Government Code Section 3508.

[52] See: Santa Clara County Counsel Attys. Assn. v. Woodside, 7 Cal.4th 525, 536-537 (1994).

[53] See: County Sanitation Dist. No. 2 v. Los Angeles County Employees' Assn., 38 Cal. 3d 564, 572, fn. 14; Government Code sections 3505.2, 3507.

off duty, if it can be shown that the officer reasonably believed that the activity resulting in the injury was expected by the agency.

If challenged, any agency-sponsored fitness program that adversely affects an officer's terms and conditions of employment must be shown to be job related and consistent with business necessity. Such challenges may be made on the basis of race, religion, color, national origin, gender, age, or physical handicap.

Any medical information collected from participants in an agency-sponsored program must be job-related and consistent with business necessity, must be collected and maintained on separate forms, and must be treated as confidential.

Fitness program standards based on separate norms defined by race, gender, etc., are prohibited pursuant to the 1991 Civil Rights Act. (Many tests of general physical fitness are scored on the basis of separate norms by gender group and/or age group.)

Mandatory or voluntary health and fitness programs that have positive or negative financial incentives affecting wages, hours, or other terms and conditions of employment cannot be unilaterally implemented; such programs are subject to the meet and confer requirements of the Meyers-Milias-Brown Act.

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APPENDIX A

AGENCIES THAT RESPONDED TO SURVEY

Agencies That Responded to Survey

Adelanto P.D.
Alameda Contra Costa Co. Transit Dist.
Alameda Co. S.D.
Alameda P.D.
Albany P.D.
Alhambra P.D.
Alpine Co. S.D.
Amador County S.D.
Anderson P.D.
Angels P.D.
Arcadia P.D.
Arroyo Grande P.D.
Atascadero P.D.
Atherton P.D.
Atwater P.D.
Auburn P.D.
Azusa P.D.
Bakersfield P.D.
Baldwin Park P.D.
Banning P.D.
BART PD
Beaumont P.D.
Bell Gardens P.D.
Bell P.D.
Belmont P.D.
Belvedere P.D.
Benicia P.D.
Berkeley P.D.
Beverly Hills P.D.
Bishop P.D.
Blythe P.D.
Brea P.D.
Broadmoor P.D.
Buena Park P.D.
Burbank P.D.
Burlingame P.D.
Butte Co. S.D.
Butte College DPS
CA Department of Fish and Game
CA Department of Health Services
CA Department of Justice - Medi-Cal Fraud
CA Department of Toxic Substance Control
CA Department of Consumer Affairs
CA Department of Human Assistance
CA Department of Justice, DLE
CA Department of Parks and Recreation
CA Department of Corporations
CA Department of Insurance
CA DMV - Div of Invest. & Occ. Licensing
Calaveras Co. D.A.
Calaveras Co. S.D.
California Highway Patrol
California Horse Racing Board
Calistoga P.D.
Campbell P.D.
Capitola P.D.
Carlsbad P.D.
Carmel P.D.
Cathedral City P.D.
Ceres DPS
Cerritos College Campus P.D.
Chico P.D.
Chino P.D.
Chowchilla P.D.
Claremont P.D.
Clearlake P.D.
Cloverdale P.D.
Clovis P.D.
Coalinga P.D.
Colton P.D.
Colusa Co. S.D.
Concord P.D.
Corcoran P.D.
Corning P.D.
Corona P.D.
Coronado P.D.
Costa Mesa P.D.
Cotati P.D.
Covina P.D.
Crescent City P.D.
CSPU Pomona P.D.
CSU Dominguez Hills P.D.
CSU Chico P.D.
CSU Fresno P.D.
CSU Fullerton P.D.
CSU Humboldt P.D.
CSU Los Angeles P.D.
CSU San Jose P.D.
CSU Stanislaus P.D.
Culver City P.D.
Cypress P.D.
Daly City P.D.
Davis P.D.
Dixon P.D.
Downey P.D.
East Bay Regional Park Dist. P.D.
El Cajon P.D.
El Centro P.D.
El Cerrito P.D.
El Dorado Co. S.D.
El Monte P.D.
El Segundo P.D.
Emeryville P.D.

Escalon P.D.
Escondido P.D.
Eureka P.D.
Fairfax P.D.
Fairfield P.D.
Folsom P.D.
Fontana P.D.
Foothill College District P.D.
Fort Bragg P.D.
Fortuna P.D.
Foster City P.D.
Fowler P.D.
Fremont P.D.
Fresno Co. D.A
Fresno Co. S.D.
Fresno P.D.
Galt P.D.
Garden Grove P.D.
Gardena P.D.
Gilroy P.D.
Glendora P.D.
Grass Valley P.D.
Greenfield P.D.
Gridley P.D.
Grover Beach P.D.
Gustine P.D.
Half Moon Bay P.D.
Hayward P.D.
Hemet P.D.
Hercules P.D.
Hillsborough P.D.
Hollister P.D.
Humboldt Co. S.D.
Huntington Beach P.D.
Imperial Co. S.D.
Imperial Co. D.A.
Indio P.D.
Inglewood P.D.
Irvine P.D.
Irwindale P.D.
Isleton P.D.
Jackson P.D.
Kensington P.D.
Kerman P.D.
Kern Co. S.D.
King City P.D.
Kings Co. S.D.
Kingsburg P.D.
La Habra P.D.
La Mesa P.D.
La Palma P.D.
La Verne P.D.
Laguna Beach P.D.
Lake Co. D.A.
Lake Co. S.D.
Lake Shastina P.D.
Lakeport P.D.
Lassen Co. S.D.
Lincoln DPS
Livermore P.D.
Livingston P.D.
Lompoc P.D.
Long Beach P.D.
Los Altos P.D.
Los Angeles Co. D.A.
Los Angeles Co. Metro. Transit Police
Los Angeles Co. S.D.
Los Angeles Comm. College Dist. P.D.
Los Angeles P.D.
Los Gatos P.D.
Madera Co. D.A.
Madera P.D.
Mammoth Lakes P.D.
Manhattan Beach P.D.
Manteca P.D.
Marin Co. D.A.
Marin Co. S.D.
Marina DPS
Mariposa S.D.
Martinez P.D.
Maywood P.D.
Mendocino Co. D.A.
Mendocino Co. S.D.
Merced Co. Marshal's Dept.
Millbrae P.D.
Milpitas P.D.
Mono Co. S.D.
Montclair P.D.
Montebello P.D.
Montebello Unified School Dist. P.D.
Monterey Co. S.D.
Monterey Park P.D.
Monterey Pen Airport District P.D.
Monterey P.D.
Moraga P.D.
Morgan Hill P.D.
Morro Bay P.D.
Mount Shasta P.D.
Mountain View P.D.
Murrieta P.D.
Napa Co. D.A.
Napa Co. S.D.
Napa P.D.
National City P.D.
Newark P.D.
Newman P.D.
Newport Beach P.D.
Oakdale P.D.
Oakland P.D.
Oceanside P.D.

Ontario P.D.
Orange Co. D.A.
Orange Co. Marshal's Dept.
Orange Co. S.D.
Orange P.D.
Oroville P.D.
Pacific Grove P.D.
Pacifica P.D.
Palos Verdes Estates P.D.
Paradise P.D.
Parlier P.D.
Pasadena Community College P.D.
Pasadena P.D.
Pasadena Unified School Dist. P.D.
Paso Robles P.D.
Patterson P.D.
Piedmont P.D.
Pinole P.D.
Placer Co. S.D.
Placerville P.D.
Pomona P.D.
Port Hueneme P.D.
Porterville P.D.
Red Bluff P.D.
Redding P.D.
Redlands P.D.
Redondo Beach P.D.
Redwood City P.D.
Rialto P.D.
Richmond P.D.
Rio Dell P.D.
Rio Vista P.D.
Riverside Co. D.A.
Riverside Co. S.D.
Riverside P.D.
Rohnert Park DPS
Roseville P.D.
Sacramento Co. D.A.
Sacramento P.D.
Salinas P.D.
San Benito Co. S.D.
San Bernardino Co. S.D.
San Bernardino P.D.
San Bernardino Unified School Dist. P.D.
San Bruno P.D.
San Carlos P.D.
San Diego Community College P.D.
San Diego Marshal's Dept.
San Diego P.D.
San Fernando P.D.
San Francisco P.D.
San Gabriel P.D.
San Jacinto P.D.
San Joaquin Co. Marshal's Dept.
San Joaquin Co. S.D.
San Joaquin Delta College P.D.
San Jose P.D.
San Leandro P.D.
San Luis Obispo Co. S.D.
San Luis Obispo P.D.
San Mateo Co. D.A.
San Mateo Co. S.D.
San Mateo P.D.
San Pablo P.D.
San Rafael P.D.
Sand City P.D.
Sanger P.D.
Santa Ana P.D.
Santa Barbara Co. Marshal's Dept.
Santa Barbara Co. S.D.
Santa Clara P.D.
Santa Cruz P.D.
Santa Monica P.D.
Santa Paula P.D.
Santa Rosa Jr. College P.D.
Santa Rosa P.D.
Scotts Valley P.D.
Seaside P.D.
Shasta Co. D.A.
Shasta Co. S.D.
Shasta Co. Marshal's Dept .
Sierra Co. S.D.
Sierra Madre P.D.
Signal Hill P.D.
Simi Valley P.D.
Siskiyou Co. S.D.
Solano Co. Marshal 's Dept.
Solano Co. S.D.
Soledad P.D.
Sonoma Co. S.D.
Sonoma P.D.
Sonora P.D.
South Gate P.D.
South Lake Tahoe P.D.
South San Francisco P.D.
Stallion Springs P.D.
Stockton P.D.
Stockton Unified School District P.D.
Suisun P.D.
Susanville P.D.
Sutter Co. S.D.
Taft P.D.
Tehama Co. S.D.
Tracy P.D.
Tulare Co. D.A.
Tulare Co. S.D.
Tulare P.D.
Tuolumne Co. S.D.
Turlock P.D.

Tustin P.D.
Twin Cities P.D.
U.C. Berkeley P.D.
U.C. Davis P.D.
U.C. Irvine P.D.
U.C. Los Angeles P.D.
U.C. Riverside P.D.
U.C. San Diego P.D.
U.C. San Francisco P.D.
U.C. Santa Cruz P.D.
Ukiah P.D.
Union City P.D.
Upland P.D.
Vacaville P.D.
Ventura Co. D.A.
Ventura Co. S.D.
Ventura P.D.
Visalia P.D.
Walnut Creek P.D.
Waterford P.D.
Watsonville P.D.
Weed P.D.
West Sacramento P.D.
West Valley - Mission College P.D.
Westminster P.D.
Whittier P.D.
Willits P.D.
Willows P.D.
Woodlake P.D.
Woodland P.D.
Yreka P.D.
Yuba City P.D.
Yuba College Dist. P.D.
Yuba Co. S.D.

APPENDIX B

CALIFORNIA AGENCIES THAT HAVE A FITNESS PROMOTION PROGRAM

CALIFORNIA AGENCIES THAT HAVE A FITNESS PROMOTION PROGRAM
(Based on interviews with 75 agencies)

Agency Code		Agency Name	Program Type[1]	Mandatory/ Voluntary[2]	Program[3] Test Type	Positive[4] Incentive	Negative[5] Incentive	Contact Person	Telephone Area	Number
MANDATORY PROGRAMS										
1		Auburn P.D.	H	M	B		R	Mike Morello	916/	823-4235
2		Berkeley P.D.	H	M	H		Q	Capt. P.E. Doran	510/	644-6701
3		Beverly Hills P.D.	H	M	F	M	I	Sgt. Matheson	310/	285-2128
6		Brea P.D.	HP	M	P	M	QT	William C. Lentini	714/	990-7748
7		Buena Park P.D.	H	M	F			Capt. Charles Self	714/	562-3911
9	*	California Highway Patrol	JC	M	C	M	QT	Garand Gruber	916/	323-0514
10		Carlsbad P.D.	H	M	H	O	QT	Joseph Hasenauer	619/	931-2115
13		Clovis P.D.	JC	M	C		R	Russ Greathouse	209/	297-2400
20	*	Escondido P.D.	H	M	V	O	QT	Sgt. Corey Moles	619/	741-4747
21		Eureka P.D.	J	M	A	DM	QT	Duane Fredrickson	707/	441-4087
26		Grass Valley P.D.	J	M	W	O		Mel Mouser	916/	477-4600
33		La Mesa P.D.	HP	M	P		Q	B.C. Burke	619/	469-6111
34	*	Lompoc P.D.	J	M	W		QT	Greg Janke	805/	736-2341
38	*	Monterey P.D.	J	M	W		Q	Stan Perry	408/	646-3849
40		Napa Co. S.D.	J	M	A	P	RT	Lt. R. Andersen	707/	253-4258
42		Newport Beach P.D.	H	M	F	DP		Mike Hyams	714/	644-3665
47		Pasadena P.D.	H	L	H	O		Marilyn Diaz	818/	405-4573
48	*	Placer Co. S.D.	JC	M	C	M	RT	Lt. Marenger	916/	889-7837
53	*	Sacramento P.d.	J	M	A		RT	Captain Busch	916/	264-7342
60		Siskiyou Co. S.D.	HP	M	P	P		Dave Cates	916/	842-8300
63		Stockton Unified School Dist.	H	M	H		Q	Donald Swartz	209/	953-4767
64		Tehama Co. S.D.	JC	M	C	M	QT	Clay Parker	916/	527-9284
65	*	Tracy P.D.	JC	M	C	M	QT	Michael Maciel	209/	835-4575
66	*	Tulare P.D.	H	M	H	D		Lt. Tom Munoz	209/	685-2300
74	*	Woodland P.D.	H	M	F	M	QT	Doug Bera	916/	661-5944
75		Yuba City P.D.	H	M	V		RT	George Carey	916/	741-4673
VOLUNTARY PROGRAMS										
4		Bishop P.D.	E	V	G	G		Lt. Frank Crom	619/	873-5824
5		Blythe P.D.	JC	V	C	M		Robert Grady	619/	922-6111
8		California Dept of Justice, DLE	H	V	F	M		Katherine Ellis	916/	227-4117
11	*	Carmel P.D.	H	V	F	DP		William Uretsky	408/	624-6403
12		Chico P.D.	H	V	B			Christine Erlandson	916/	895-4821
14		Coalinga P.D.	E	V	G	G		John DeAngelis	209/	935-1525
15		Davis P.D.	E	V	E			Dusty McAuley	916/	756-3915
16	*	Downey P.D.	H	V	F	P		Terry Pruitt	310/	904-2322
17		El Dorado Co. S.D.	W	V	X	D		Uls Roth	916/	621-6540
18		El Segundo P.D.	H	V	F	P		David Cummings	310/	607-2260
19		Emeryville P.D.	H	V	H	G		Jeannie Wong	510/	596-3706
22	*	Fairfield P.D.	H	V	F	M		Tony Ford	707/	428-7360
23	*	Fremont P.D.	H	V	F	D		Steve Clark	510/	790-6800
24		Fresno P.D.	W	V	X			Mary Hains	209/	498-1450
25		Gilroy P.D	H	V	F	P		Lanny Brown	408/	848-0313
27	*	Grover Beach P.D.	HP	V	P	M		Sgt. John Tooley	805/	473-4511
28	*	Hayward P.D.	H	V	F	G		Steve Brown	510/	293-7115
29		Hemet P.D.	W	V	X	G		Suzzanne Kozma	909/	765-2409
30		Humboldt State Univ. - DPS	E	V	E	D		James E. Hulsebus	707/	826-3456
31	*	Huntington Beach P.D.	H	V	F	P		Tom Arnold	714/	536-5627

Agency Code	Agency Name	Program Type[1]	Mandatory/ Voluntary[2]	Program[3] Test Type	Positive[4] Incentive	Negative[5] Incentive	Contact Person	Telephone Area	Telephone Number
32	Inglewood P.D.	H	V	F	P		Sgt. Darrell Jensen	310/	412-5568
35	Los Altos P.D.	W	V				Suzie Galvez	415/	948-8223
36	Los Angeles Co. S.D.	W	V				Bob Alcaraz	213/	226-4324
37	Mono Co. S.D.	E	V	G	G		Cole Hampton	619/	932-7549
39	Mount Shasta P.D.	E	V	G	G		Adam Oreck	916/	926-2345
41	Newark P.D.	H	V	V			Rick Zampa	510/	793-1400
43 *	Oakdale P.D.	HP	V	P	M		Bruce Cochran	209/	847-2231
44 *	Oceanside P.D.	HP	V	P			Sgt. Terry Dove	619/	966-4292
45	Orange P.D.	E	V	G			Steve Ames	714/	744-7430
46 *	Pacific Grove P.D.	H	V	F	PMD		Tom Uretsky	408/	645-2411
49 *	Porterville P.D.	W	V	F	M		Josie Castaneda	209/	782-7441
50 *	Redding P.D.	W	V	X			Sgt. Wes Reynolds	916/	225-4285
51 *	Redondo Beach P.D.	J	V	A	D		Mike Worford	310/	379-2477
52 *	Rohnert Park DPS	H	V	F	P	I	David Frazer	707/	584-2631
54 *	San Francisco P.D.	HP	V	P	P		Pam Hofsass	415/	695-6941
55	San Luis Obispo P.D.	W	V	X	G		Wendy George	805/	781-7251
56	San Mateo S.D.	JC	V	C	M	R	Greg Trindle	415/	363-4507
57	Sanger P.D.	W	V	F	O		Stan Tauares	209/	875-7513
58	Santa Ana P.D.	W	V	X	G		Lt. G. Saadeh	714/	647-5023
59	Scotts Valley P.D.	E	V	G			William H. Smith	408/	438-2326
61 *	South Gate P.D.	H	V	F	P		Russ Galbreath	213/	563-5486
62	South Lake Tahoe P.D.	H	V	F	P		Bart E. Owens	916/	542-6130
67	Twin Cities P.D.	E	V	G	G		Anthony Hoke	415/	927-5150
68 *	U.C. San Diego P.D.	HP	V	P	D		Jeff Hutchison	619/	534-4358
69 *	Ukiah P.D.	W	V	X	M		John Williams	707/	463-6242
70	Vacaville P.D.	H	V	V			Todd Dischinger	707/	449-5432
71 *	Visalia P.D.	H	V	F	M		Dennis Swiney	209/	738-3237
72	Walnut Creek P.D.	H	V	H	M		Gary Johnson	510/	943-5844
73	West Sacramento P.D.	W	V				R. Moore	916/	373-5870

* A copy of the agency's program is on file at POST

[1] Program Types

C California Highway Patrol Model - Based on administration of the CHP test described in Table 3. Includes heart rate and blood pressure monitoring during test, and approved exercise program, and incentives (usually money) for meeting minimum standards on the test.

E Exercise program only - no testing. These programs provide officers with an agency-paid gym or spa membership and encouragement to exercise.

H Hospital affiliated assessment program - Describes programs in which the agency contracts with a hospital to perform detailed health and fitness evaluations of its officers. Programs usually involve provision of extensive written feedback reports to participating officers and an opportunity for individual counseling.

J Job-related performance testing - Describes programs which attempt to assure minimum job performance by administering a job related test, such as the POST Basic Academy Work Sample test or a similar test that requiresexaminee to perform standardized physical job tasks (e.g., wall scaling, moving a dummy).

P POST In-Service Fitness Program or variant - This is a prototype, health-related and voluntary in-service program that was developed and released by POST in 1992.

W Wellness program - Programs that focus on the reduction of risk factors such as poor nutrition, tobacco use, stress, alcohol and drug abuse, and the lack of physical fitness. These are typically agency-wide programs (city, county) that promote health through offerings of various educational and/or health interventions such as nutrition and low back injury prevention seminars, lifestyle questionnaires, screening for cancer and high blood pressure, smoking cessation clinics, and low cost or free medical examinations.

[2] Mandatory/Voluntary codes:

M = Mandatory V = Voluntary L = Mandatory for Lieutenants only

[3] Program Test Type Codes:

- A — POST Academy Work Sample Test - see Table 3
- B — Either the POST Academy Test (see Table 3) or an adult fitness test battery (e.g., 1.5 mile run, push-ups, sit-ups, flexibility measures, percent body fat, etc.)
- C — California Highway Patrol test or variant; see Table 3
- E — Voluntary exercise only, no testing
- F — Adult fitness test battery (e.g., 1.5 mile run, push-ups, sit-ups, flexibility measures, percent body fat, etc.)
- G — Gym/Spa membership only - no testing
- H — Hospital run assessment program - Describes programs in which the agency contracts with a hospital to perform certain health and fitness evaluations of its officers. Programs usually involve provision of extensive written feedback reports to participating officers and an opportunity for individual counseling. Tests typically include blood pressure, lipid profile (cholesterol, triglycerides), diet analysis, and a battery of adult fitness tests (see item F above)
- P — POST In-Service Program or variant; utilizes an adult fitness test battery (see item F immediately above)
- V — Vendor-run/contracted program - same as hospital procedures (see H above) not does but involve a hospital.
- W — Local Work Sample Test - A test that includes job simulations that are administered and scored based on locally developed data. Test typically includes wall and/or fence climbing, running obstacle courses, entering/exiting vehicles, dragging, lifting, and/or carrying a dummy.
- X — Employer-run wellness program - No tests given

[4] Positive Incentive Codes

- D — Workout on duty
- G — Gym membership paid
- M — Money/cash
- P — Paid time off
- O — Other (e.g., T-shirts, certificates, plaques, towels, bags, name in newsletter)

[5] Negative Incentive Codes

- I — Loss of credited incentive pay
- Q — Progressive discipline
- T — Termination
- R — Job restrictions (e.g., loss of eligibility for promotion, pay raises, special assignments, overtime, transfers)

APPENDIX C

HEALTH PROMOTION TERMINOLOGY

HEALTH PROMOTION TERMINOLOGY

The literature on health and fitness is filled with technical terms and words that are used, often indiscriminately, to describe various subject matter. It is not uncommon for the same term to be used by different authors to describe entirely different concepts.

To avoid confusion, and to make it easier to compare the results of the current survey and the 1985 survey, program activities have been grouped into the same categories used in the 1985 survey. These categories, along with a general list of fitness terms, are presented below.

Fitness Assessment

Fitness assessment activities may be either health-related or job-related.

Health-Related Fitness Assessment refers to the identification of disease or adverse health behaviors (risk factors) leading to disease. Such assessments can provide a variety of information of importance to a fitness promotion program. For example, a review of medical records or insurance claims can provide the information necessary to plan the type of program needed, or individual assessments at the outset of the program can provide benchmark data against which future changes can be measured. Health risk appraisals may also alert the individual to the potential consequences of continued unhealthy behavior and may serve to motivate behavioral changes.

Specific measures used to assess health usually fall into three categories. The first of these categories, disease detection, includes such items as hypertension screening, cancer detection (either through self-examination or periodic medical examinations), and blood screens or urinalyses to detect diabetes, high cholesterol, etc. The second category of assessment focuses on the determination of individual risk factors, either biological or behavioral. Such factors can be measured through completion of one of the many risk charts available, through maintenance of nutritional diaries, and/or completion of family or individual health histories.

The third category of assessment is directed toward evaluation of the individual's overall health or physical fitness through such measures as aerobic capacity, percentage of body fat, blood pressure, flexibility, etc. These measures are then compared to norms established for the individual's age and gender.

Job-Related Fitness Assessment refers to the evaluation of one's ability to perform specific physical job tasks. This type of assessment is less common, and is applicable only for jobs, such as the entry-level patrol officer job, which require the performance of specific, demanding physical tasks. Because job-performance related fitness assessment is designed to evaluate

one's ability to meet the physical demands of a job, which are invariant with the person performing the job, the criteria used to establish one's ability to perform the physical job demands are the same for all job incumbents, regardless of their age or gender. As discussed later, job-performance related assessments are of limited utility for assessing one's health status.

Health Intervention

Health intervention activities attempt to reduce risk factors through modification of health behaviors. Health intervention strategies may include smoking cessation, weight control, exercise/fitness prescriptions, nutritional prescriptions, hypertension control, or cardiac rehabilitation programs (usually monitored by those organizations which have an in-house medical department).

Health Education

Health education activities are designed to increase awareness of the opportunities for self-improvement. This is accomplished through a variety of means including traditional information dissemination techniques such as memos from management, newsletters, and classroom instruction; posting of nutritional information on dietary selections in the company cafeteria; offering low-cholesterol/low fat/low salt items on the menu; providing maps with mileage measurements for walking/jogging courses around the work site; and holding health fairs for employees.

Definitions of Terms

Wellness program The term "wellness" is used in the literature primarily as a heading to describe a health and/or fitness program. The term is used interchangeably with the term "health promotion program." Wellness programs usually contain one or more components such as exercise classes, education on diet, nutrition, or stress management, as well as thorough medical examinations.

Wellness refers to the realization of our highest potential for total well-being by focusing on those factors which affect quality of life and are within our control. Included in this category are the reduction of risk factors such as poor nutrition, tobacco use, stress, alcohol and drug abuse, and the lack of physical fitness and regular medical care.

Physical fitness The term "physical fitness" has been defined in many ways. Most definitions of physical fitness refer strictly to the capacity for movement and the following definition is typical in this regard:

> A set of attributes that people have or achieve that relates to the ability to perform physical activity. (Caspersen, Powell and Christenson, 1985)

Such definitions are, by their nature, very general and can be thought of as encompassing a broad array of fitness components, some of which relate to athletic performance, but not to health. In view of this, the term health-related physical fitness has been adopted by the American College of Sports Medicine (ACSM) to denote fitness as it pertains to disease prevention and health promotion (Pate et al., 1991). In contrast, the term job-related physical fitness was adopted by POST in 1986 to refer to the evaluation of one's ability to perform specific physical job tasks.

The definition of health-related physical fitness endorsed by the ACSM is:

> A state characterized by (a) an ability to perform daily activities with vigor, and (b) demonstration of traits and capacities that are associated with low risk of premature development of the hypokinetic diseases (i.e., those associated with physical inactivity). (Pate, 1988)

According to the ACSM, (Pate et al., 1991), ". . .although many different definitions of physical fitness have developed, there is relative uniformity in the 'operational' definition of physical fitness. It has almost always been viewed as a multifactorial construct that includes several components. Each component is a movement-related trait or capacity that is considered to be largely independent of the others. Health-related physical fitness is typically operationally defined as including cardiorespiratory endurance, body composition, and muscular fitness (muscular strength and endurance, and flexibility). The concept that underlies 'health-related physical fitness' is that better status in each of the constituent components is associated with lower risk for development of disease and/or functional disability."

Cardiorespiratory endurance is defined as the ability to perform large-muscle, dynamic, moderate-to-high intensity exercise for prolonged periods. Performance of such exercise depends on the functional state of the respiratory, cardiovascular, and skeletal muscle systems. Cardiorespiratory endurance is considered health-related because: (a) low levels of fitness have been associated with markedly increased risk of premature death from all causes and from cardiovascular disease specifically, and (b) higher fitness is associated with higher levels of habitual physical activity which is, in turn, associated with many health benefits (Pate et al., 1988). Cardiorespiratory endurance is frequently referred to as **aerobic capacity**.

Body composition refers to the percentage of body weight that is fat (% body fat), and its measurement is based on the assumption that body weight can be dichotomized into lean body weight and fat weight. Body composition is considered health-related because it is well established that excess body fat is harmful to health.

Muscular fitness The term "muscular fitness" is used to describe the integrated status of the following factors: muscular strength, muscular endurance, and flexibility. Muscular fitness is considered health-related because, if properly conducted, programs for the development of muscular fitness can maintain or improve posture and prevent or reduce muscular low back pain. Maintenance of adequate muscular performance is also an important consideration for the promotion of the capacity of the elderly to perform essential daily tasks and to live independently.

Muscular fitness is broken down into three elements as follows:

> Muscular strength refers to the maximal force that can be generated by a specific muscle or muscle group.
>
> Muscular endurance refers to the ability of a muscle group to execute repeated contractions (i.e., perform work) over a period of sufficient time duration to cause muscular fatigue.
>
> Flexibility is the maximum ability to move a joint through a range of motion.

According to the ACSM, measurement of physical fitness is a common and appropriate practice in preventive (and rehabilitative) exercise programs where the purposes of fitness testing include:

1. Provision of data that are helpful in development of exercise prescriptions.
2. Collection of baseline and follow-up data that allow evaluation of progress in program participants.
3. Motivation of participants by establishing reasonable and attainable fitness goals.
4. Education of participants concerning the concept of physical fitness and individual fitness status.

A fundamental goal of preventive exercise programs is promotion of health. Therefore, such programs should, and usually do, focus on enhancement of the health-related components of physical fitness.

A detailed discussion of accepted methods of fitness testing is beyond the scope of this report. However, the procedures most often recommended in the literature are shown in Table C-1 along with appropriate reference citations.

Table C-1

Methods of Assessing Physical Fitness

Assessment Procedures	References[54]
Cardiorespiratory Endurance	
YMCA cycle ergometer test	1
3 minute step test	1
1.5 mile run for time	2
12 minute run for distance	2
Mile run/walk for time	2
Rockport fitness walking test	3
3 mile walk	4
Body Composition	
Hydrostatic (underwater) weighing	5
Skinfold thickness	5
Waist-to-hip ratio	6
Body mass index	7
Muscular Strength	
1-Rep max bench press	8
Military Press	8
Leg Press	8
Handgrip dynamometer	8
Vertical jump (muscular power)	8
Bench press test (repetition)	1
Muscular Endurance	
60-second sit-up (abdominal)	6, 8
Maximum push-ups (upper body)	8
Flexibility	
Devices (Leighton fleximoter, gonionmeters)	9
Trunk flexion (sit and reach)	1, 6, 8

[54]Numbers refer to entries in the references on the following page.

PHYSICAL FITNESS ASSESSMENT REFERENCES

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8 Gettman, L.R., (1988), "Fitness testing," in Resource Manual for Guidelines for Exercise Testing and Prescription, Edited by American College of Sports Medicine, Philadelphia: Lea & Febiger.

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APPENDIX D

EXTENDED LITERATURE REVIEW NOTES

Health and Fitness Program Factors That Bear upon Health Status

Smoking Cessation. There is no question that tobacco smoke is hazardous to one's health. It has been implicated as a cause or maintenance factor[55] in four of the ten leading causes of death (Kaplan, 1985; Allegrante, 1984). It is considered to be the largest single preventable cause of death in the U.S. (Herzlinger and Calkins, 1986). People who stop smoking reduce their risk of developing coronary heart disease to approximately the equivalent of non-smokers within five to ten years, and for developing lung cancer within ten to fifteen years. Estimates for success of smoking cessation efforts range from 33% to 80% for those programs which use intensive clinical-education assistance, and 15% to 27% for those which provide the smoker with information, brief instructions and encouragement (Fisher et al., 1990; Bertera et al., 1990; Hendrix and Taylor, 1987; Fielding, 1982).

It is also estimated that workplace smoking cessation programs could reduce absenteeism, which is about 33% higher for smokers than nonsmokers (Erfurt et al., 1992; Hendrix and Taylor, 1987; Herzlinger and Calkins, 1986), health care costs (smokers use the health care system 50% more than nonsmokers), worker's compensation costs (based on studies which suggest that smokers experience twice the work-related accidents of non-smokers), costs of fire and life insurance, the adverse health effects of second-hand smoke, and turnover due to higher rates of death and disability among smokers (Altman et al., 1987; Fielding, 1982).

Hypertension Control. Hypertension is a risk factor for cardiovascular disease and stroke, two of the top three causes of death in this country (Herzlinger and Calkins, 1986). In contrast to other risk factors for these diseases (heredity, smoking, and hyperlipidemia), it is considered to be the most responsive to available interventions (Parkinson, 1982).

Studies which have demonstrated successful intervention in the workplace are numerous (Erfurt et al., 1992); examples include:

> A University of Michigan project, conducted at the Ford Motor company, which achieved a 98% control rate among hypertensive employees and reduced absenteeism among those employees from levels which had formerly ranged from 12% to 30% higher than those of non-hypertensives (Kiefhaber and Goldbeck, 1984).
>
> A program offered to United Storeworkers Union members which produced at least a 10% decline in blood pressure levels in 81% of the participants and reduced hospital use and deaths from heart attacks eight years later (Herzlinger and Calkins, 1986).

---

[55]Maintenance in the sense that continued smoking exacerbates already unhealthy conditions.

A voluntary screening, referral and follow-up program at Massachusetts Mutual Life Insurance Company which increased the percentage of hypertensives under control from 36% to 82% (Fielding, 1982).

The work site is perceived as an appropriate site for hypertension control programs because it may facilitate early detection of problems and greater adherence to treatment.

Physical Inactivity/Exercise. The U.S. Department of Health and Human Services (1993) reports that sedentary lifestyle has been identified as one of the major risk factors for coronary heart disease (CHD), the leading cause of mortality in the U.S. In addition, there is a relationship between physical inactivity and excess body weight (obesity), a risk factor for diabetes and some cancers (Herzlinger and Calkins, 1986). Moreover, poor abdominal muscle tone and lack of flexibility associated with sedentary lifestyle are major contributors to incidents of low back discomfort (Parkinson, 1982). In law enforcement, between 70 and 90 officers across the nation die from assaults each year, but more than 2,000 die from heart attacks (Schaefer, 1993).

Many studies have been conducted which indicate that mild to moderate levels of physical activity (e.g., walking, gardening, yardwork, and dancing) most likely help prevent CHD. Powell et al. (1987), in a review of 43 epidemiologic studies, concluded that moderate to vigorous physical activity reduces risk for CHD. Two-thirds of the studies documented a substantial inverse relation between physical activity and risk for CHD. In addition, the risk for CHD was increased nearly twofold for persons who were physically inactive (relative risk = 1.9; 95% confidence interval = 1.4-2.5), a level comparable to the relative risks associated with increased systolic blood pressure (2.1), cigarette smoking (2.4) and elevated serum cholesterol (2.4).[56] A subsequent meta-analysis conducted by Berlin and Colditz (1990) and results from other longitudinal studies (Paffenbarger et al., 1993) support the role of physical inactivity as a strong and independent risk factor for CHD.

In July 1993, the Center for Disease Control and Prevention (CDC), the American College of Sports Medicine (ACSM) and the President's Council on Physical Fitness and Sports jointly proclaimed that Americans should incorporate regular physical activity into their daily lives for the purpose of maintaining health.[57] Essentially, this is a new message of moderation regarding the level of physical activity recommended for the prevention of Coronary Heart Disease. The recommendation

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[56]Pooling Project Research Group, (1978), "Relationship of blood pressure, serum cholesterol, smoking habit, relative weight and ECG abnormalities to incidence of major coronary problems," Journal of Chronic Diseases, Vol.31, p.202-306.

[57]Sports Medicine Bulletin, Vol. 28, No.4, p.3,7, (1993). A rational for this initiative also was published in the Morbidity and Mortality Weekly Report, Vol.42, No.35, p.669-672 (1994).

expresses the view that people should integrate moderate intensity physical activities into the patterns of their lives so that they accumulate at least 30 minutes of exercise each day for at least 5 days per week. The statement elaborates on the need for judicious progression toward these goals, especially for those who are most sedentary. Additional points advocate that those with erratic patterns of exercise improve the regularity of their activity, that others add preplanned recreational exercise as part of their efforts and that everyone incorporate appropriate activities that will help maintain strength and mobility.

The new statement does not appear to be directed at those who are already moderately active. Rather, it seems to be aimed at motivating that segment of the population that is now far less active than it should be to maintain health.[58]

This new message represents the "lower end" of the training prescription advocated in the American College of Sports Medicine's earlier scientific position stand on the "Recommended Quantity and Quality of Exercise for Developing and Maintaining Cardiorespiratory and Muscular Fitness in Healthy Adults" (1990), which makes the following recommendations:

1. Frequency of training: 3 to 5 days per week.

2. Intensity of training: 60 - 90% of maximum heart rate (HR_{max}), or 50 - 85% of maximum oxygen uptake (VO_{2max}) or HR_{max} reserve.[59]

3. Duration of training: 20 - 60 minutes of continuous aerobic activity. Duration is dependent on the intensity of the activity: thus, lower intensity activity should be conducted over a longer period of time. Because of the importance of "total fitness" and the fact that it is more readily attained in longer duration programs, and because of the potential hazards and compliance problems associated with high intensity activity, lower to moderate intensity activity of longer duration is recommended for the nonathletic adult.

4. Mode of activity: any activity that uses large muscle groups, can be maintained continuously, and is rhythmical and aerobic in nature, e.g., walking-hiking, running-jogging, cycling-bicycling, cross-country skiing, dancing, rope skipping, rowing, stair climbing, swimming, skating, and various endurance game activities.

5. Resistance training: Strength training of a moderate intensity, sufficient to develop and maintain fat-free weight should be an

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[58] Some estimates have suggested that the least physically active subset of Americans now exceeds 20%; see: Exercise Standards and Malpractice Reporter, Vol.8, No.2. p.20, (1994).

[59] Maximum heart rate reserve is calculated from the difference between resting and maximum heart rate. To estimate training intensity, a percentage of this value is added to the resting heart rate and is expressed as a percentage of HR_{max} reserve (Karvonen et al., 1957).

integral part of an adult fitness program. One set of 8-12 repetitions of eight to ten exercises that condition the major muscle groups at least 2 days per week is the recommended minimum.

Notes On Health Care Cost Containment Studies

Shephard (1992) reviewed 17 studies where medical costs were analyzed as a function of participation in an employee fitness program. All but one found a significant reduction in medical costs. More recently, Connors (1992) found that medical costs at a mid-size manufacturing company were significantly lower each year for exercisers versus non exercises over an 8-year period. Several of these studies are summarized below:

- In Canada, a program promoting physical activity in a selected work site was evaluated after 12 years of operation (Shephard, 1992a). The program consisted of professionally led physical activity classes 2-3 times per week for 30-45 minutes per session; an onsite gymnasium and exercise equipment also were made available to employees of the company. Per capita medical claims were lower in the intervention site than in a control site having no promotion of physical activity. For each worker, the intervention saved $679 in medical claims per year, a return of $6.85 on each dollar invested.

- Bowne et al. (1984) report that those involved in a physical fitness program during a Prudential Insurance Company study showed a 45.7% reduction in major medical costs in the post entry year. There was a reduction of 20.1% in the average number of disability days and a 31.7% reduction in direct disability dollar costs in one year post entry.

- In a 1986 study at Johnson and Johnson, Bly el at. (1986) reported an annual in-patient cost increase per employee of $42 in companies with exercise programs versus $76 in companies without exercise programs.

- Several short-term controlled studies which have used either matched factories within a company (Bly et al. 1986; Dedmon, 1988) or matched comparison companies all showed an early decrease in the direct cost of illness in the samples where fitness programs were installed (Cox et al., 1981, 1981a).

Warner and his co-workers (1988) state the belief ". . .that behavior related improvements in health should lead to containment of costs is tautological: Health promotion programs encourage behaviors that improve participant's health; improved health means less need to utilize expensive medical care services."

According to Warner:

> One of the great handicaps confronting health promotion programs is that they are measured against a higher, more demanding standard than is conventional treatment-oriented (and health insurance covered) medical care. A medical care intervention simply has to represent accepted medical practice. By contrast, a health promotion intervention often has to prove its effectiveness (a standard not required of many surgical and medical procedures), and its cost savings (never required of a medical intervention). . . Thus, as currently construed, the economic argument in health promotion implicitly forces the novel health promotion intervention to compete on the health side with established and insured patterns of medical care. On the fiscal side, it must vie with more effective restructuring of insurance benefits and delivery systems, each motivated exclusively by the desire to contain costs and neither needing to demonstrate a health outcome benefit. The deck is stacked against health promotion. The lack of solid evidence regarding work site health promotion's economic yield should not be misinterpreted. The possibility remains that health promotion will be demonstrated to offer an excellent financial yield in many areas. The paucity of scientifically solid evidence merely highlights the need for additional research.

Work site-based programs have been estimated to cost employers approximately $100-400 per employee per year with an the estimated rate of return of $513 per employee year, which includes reduced health-care costs and reduced loss of productivity (Shephard, 1989a). Other writers have noted that a major portion of total costs are generated by a small fraction of the population (Leatt et al., 1988) and those generating medical demands seem the least likely to participate in an exercise program of prevention (Channell and Bernacki, 1985).

Notes on Interpreting Health Care Costs

Despite the available evidence, current thinking on cost containment is that the relation of health care costs and health and fitness programs is complex and involves many more factors than have been typically reported in the literature. According to Lynch (1994), even though studies exist that demonstrate the economic benefits of positive health habits, we should nevertheless be cautious or skeptical about this evidence because health care costs more accurately measure the use of health services than health status. Lynch cites evidence that "healthy employees" and "less costly employees" are not the same thing. The presumed relationship of health promotion to costs follows this logic: Health promotion leads to improved current health; improved health leads to reduced likelihood of disease; and reduced risk of disease leads to fewer expenses. Therefore, health and fitness programs lowers health care costs.

Obviously, health and costs are related, especially in extreme cases where, for example, hospitalization for a terminal condition costs more than treatment in a

doctor's officer for a minor condition. Similarly, treating a severe fracture probably costs more than treating a minor sprain. But, according to Lynch (1994), as two conditions become more similar, or more difficult to diagnose, the cost differences become progressively less health related. Two identical health problems could have drastically different costs, depending on a complex range of decisions.

The reverse argument is less compelling. How accurate would a conclusion be about someone's health, if based on just knowing his or her overall costs? If women average $500 a year more in health costs than men, how valid is the conclusion that men are in better health?

Although costs obviously measure health status in some cases, they also frequently reflect the beliefs, behaviors, and choices of the patient or physician.

Health care system. According to Lynch, a great deal of variability in medical expenses lies in the health care system itself or in the patient's choice of where to interact with the system. One study demonstrated tremendous differences from one town to the next in the likelihood of patients' undergoing a given medical procedure for the same condition (Wennberg and Gittelson, 1982). Similarly, the availability of new, sophisticated treatments will produce costs much higher for the patient who can obtain them than for a patient who does not have access to them. One's choice of the type of physician he sees as well as where and when to obtain medical care also affects cost. Treatment by specialists is normally more costly than is treatment by a family physician; local clinics cost less than going to an emergency room; and using a nurse practitioner is less costly than going to a physician. Again, these cost differences do not reflect differences in one's health.

Health perception. Perceptions about one's personal health also influence how employees use available health services. The number of times a person sees his/her doctor corresponds more closely to his/her personal perception of health than to the doctor's evaluation. Connelly (1991) found that for two groups of equally healthy people, those who thought that they were in poor health averaged 2.4 more visits to their doctor per year than did those who considered themselves to be healthy.

According to Lynch (1994), preventive behaviors are closely tied to personal beliefs about the value of prevention and one's ability to successfully maintain the behavior. Thus, future health costs can be influenced indirectly by beliefs that enable or discourage an individual from practicing healthy behaviors.

Health insurance plans. Some of the variation in costs is due to differences in health insurance plans. According to Herzlinger & Schwartz (1985), some health services are avoided more often when they are not covered (i.e., not paid for) by health insurance or when the employee must pay more of the cost. Also, how much employees know about their benefits can influence health care usage. For example, someone who knows what is covered may seek certain types of care more frequently than someone who is unsure about his/her coverage.

Notes on Cost-Effectiveness and Physical Inactivity

Based on 1989 mortality estimates for CHD, the extrapolated cost of physical inactivity in the United States is $5.7 billion.[60] Among other risk factors for CHD, only elevated serum cholesterol has a higher estimated cost (see Table D-1). A cost-effectiveness analysis to estimate the health and economic implications of a physical activity program in preventing CHD was conducted by Hatziandreu et al. (1988) using a model of two cohorts (one physically active and another inactive) of 1000 men aged 35 years. This analysis was based on a 30-year period to observe differences in the occurrence of CHD events, life expectancy, and quality-adjusted life expectancy. Physical activity was associated with 78 fewer CHD events and 1138 quality-adjusted life-years gained during the 30-year period.

Table D-1

Percent of Risk Associated with Coronary Heart Disease (CHD) Deaths for Selected Factors and Their Estimated Costs (Hahn et al., 1990)

Risk Factor	Attributable risk(%)[61] (N=593,111)	Estimated cost (billions)*
Physical inactivity	34.6	$5.7
Obesity	32.1	$5.3
Smoking	25.0	$4.1
Hypertension	28.0	$4.7
Elevated serum cholesterol	42.7	$7.0

*Costs include hospital, physician, and nursing services; medicines; and lost productivity

Theoretical estimates suggest that, in the United States, 20,000 fewer persons would die per year if half of those persons with no leisure-time physical activity begin to participate in moderate physical activity (e.g., brisk walking) a minimum of 2-3 times per week (Powell and Blair, 1993). Biologic mechanisms through which physical activity may prevent CHD include improved weight control, enhanced glucose tolerance and insulin sensitivity, reduced blood pressure, improved coronary artery blood flow, and augmented high-density lipoprotein levels.

[60]U.S. Department of Health and Human Services, (1993) "Physical Activity and the Prevention of Coronary Heart Disease," , Morbidity and Mortality Weekly Report, Vol.42, No. 35, p.669-672.

[61] Figures in this column indicate the percentage of the 593,111 people who died of coronary heart disease in 1986 that are attributable to the shown risk factors.

Notes on the Psychological Benefits of Work site Fitness Programming

Although regular exercise is believed to produce improvements in psychological functioning, research attempting to validate these assumption has produced equivocal findings due to poor research designs (Norvell and Belles, 1993).

Complicating the understanding of the effects of exercise, several researchers have attempted to identify whether specific types of exercise are required to produce psychological benefits.

Early research suggested that exercise type was critical and that aerobic exercise was necessary to produce antidepressant and anxiolytic effects (McCann, 1984). However, Doyne et al. (1987) reported that aerobic running and non aerobic weight lifting were equally effective in the treatment of clinical depression in women. Also, Norvell, Martin and Salaman (1991) found that normal, sedentary women participating in passive (non aerobic) exercise showed greater psychological improvement than women participating in an exercise program. Steptoe and Cox (1988) found that high-intensity exercise led to immediate increases in tension, anxiety and fatigue, whereas positive mood changes were seen following low-intensity exercise only. Such research suggests that the underlying mechanisms accounting for the psychological benefits of exercise are varied and not unique to aerobic training. In this regard, some authors warn that "regular exercise does not make psychologically normal individuals more normal" (Dishman, 1985; Morgan, 1984).

Norvell and Belles (1993) found that police officers who received four months of circuit weight training demonstrated significant reductions in psychological symptoms compared with a control group. They claim that psychological benefits of exercise may be due to factors such as changes in appearance, separation from a stressful work environment, and regular contact with other individuals at the exercise facility.

In a confidential study of a program designed to teach individuals about blood pressure reduction, cholesterol reduction, weight management, stress management and smoking cessation (Pruitt et al., 1991) researchers looked at differences in blood pressure, a symptom checklist and a 'state-trial-anxiety index' in a group of 64 Pentagon workers who had elevated blood pressure (BP). They found significant decreases in these measures and ascribed them to a stress management program. However, because the group was involved in other types of interventions, in addition to stress management, researchers were unable to determine the precise role that exercise versus the other interventions had in reducing BP and anxiety.

Individuals in law enforcement have been shown to experience a high number of both emotional and physical disorders believed to be stress related (Malloy and Mays, 1984). Research to date suggests that feelings of helplessness and uncontrollability in the work environment may be a major source of stress in law

enforcement officers (Norvell and Belles, 1993). The effects of exercise on officers' psychological functioning remains largely anecdotal and limited to broadly defined and variously measured concepts such as "job attitude" and "job enthusiasm" (Lester et al., 1984).

Notes on Fitness Program Participation and Adherence

According to Leviton (1989), in order for a work site health promotion program to achieve positive effects, a chain of events must occur: intervention must be given; the workforce must participate, stay in the program, and reduce risks; health and other benefits must increase; and finally, employer costs must decrease. Projections about the beneficial effects of health promotion (e.g., reduced absenteeism and medical care costs) rest upon many assumptions about these relationships, and to the extent that these events fail to occur, research projections are likely to fail.

Martin and Dubbert (1985) report that the most critical factors characterizing high risk dropouts are often psychological or biological, such as being overweight, having low motivation, or being depressed. Other factors thought to characterize dropouts include lack of spousal support, inconvenient exercise facilities, and individual, high-intensity activity with little or no reinforcement during the exercise. Also, according to Campbell (1990), non participants and program dropouts cite "lack of time" as the main barrier to physical activity.

Several authors report measures to counteract the effect of attrition. Belisle et al. (1987), for example, hypothesized that individuals exposed to relapse-prevention training (Marlatt and Gordon, 1980) would show better adherence, compared to individuals receiving only the regular exercise program, both during a 10-week program and also for the critical three-month period following termination of the program. Relapse-prevention training educates exercisers about the factors believed to be associated with exercise stoppage. They found that individuals exposed to relapse-prevention training showed consistent superiority in both short and long-term adherence.

Other researchers have emphasized the importance of social support and group cohesiveness in promoting exercise adherence (Marlatt and Gordon, 1980; Martin et al., 1984).

Finally, according to Harrison and Liska (1994), one component of adherence that has received recent study is goal setting. Achieving goals is a function of commitment on the part of the exerciser, and commitment, in turn, is dependent upon the attractiveness of the goal and the amount of control that exercisers perceive they have in the program. Harrison and Liska (1994) conclude that to be effective in improving adherence to exercise, fitness program managers must

concentrate on reducing the perceived work- and health-related barriers to exercise participation and goal attainment, especially for employees with high health risks.

Notes on Important Factors in Successful Health/Fitness Programs

Bailey (1990) reports that fitness experts from several well known private sector fitness programs all agreed that a wellness program's success depends largely on support from the company's top management.

Regarding a field office program at Travelers Insurance, "Taking Care," Golaszweski et al., (1992) state "the true effectiveness of the program may not come from the quality of the interaction and activities involving people." Screening, contests, and special promotions and events may provide the real impetus for successful health behavior change to occur. The best predictors of self-reported health status change were participation in special activities and support from co-workers and supervisors and not the use of materials or facilities. Golaszweski also reports that mass communication about health/wellness demonstrated a substantial benefit-to-cost ratio and that other researchers have also shown that this strategy typically provides excellent financial returns (Altman et al., 1987; Brownell and Felix, 1987).

According to Connors (1992), for a health promotion program of any size to work, an organization needs to provide an environment that encourages change. Wellness has to have the support of top management, both philosophically and financially and it has to be integrated into the workplace. In addition, a good program of any size needs a committed, skillful work-site health promotion manager who is given the time, resources and direction to do the job well.

According to Terborg (1986) and Harrison and Liska (1994), motivating individual employees to change health-related behaviors in a health promotion program (whether the program involves on-site exercise, regular health screening, health education, or changes in health-related behaviors outside work) is necessary for ensuring the program's organizational-level success. Several authors have pointed out that it is important to establish sound motivational principles on which to base a successful program (Gebhardt and Crump, 1990; Guthrie and Olian, 1990; Terborg, 1986).

Harris (1991), discussing considerations for doing program evaluation studies and adhering to program criteria, says that it is important that any business activity be monitored and audited to demonstrate that the funds expended on the activity produce a net benefit for the organization. Failure to account for costs and benefits periodically, on the grounds that a program is obviously necessary or clearly a good idea, will be ultimately unacceptable to management. Key issues to address when structuring and operating health promotion programs are the nature of the costs and benefits to be tracked, and the methods to be used.

Notes on the Prevalence of Health/Fitness Programs

The Wellness Councils of America (WELCOA), reports that 25 cents of every dollar of net profit for many employers goes to pay health benefits, and this is the overriding reason why programs are implemented. Also, according to WELCOA, more than two-thirds of American businesses with 50 or more employees had some form of health promotion program in 1990 with smoking cessation, back care, stress management, and health risk appraisals being the most popular (Bailey, 1990).

Notes on the Quality Of Fitness Research

Advocates of work site health promotion have sometimes overstated the likely benefits. Several literature reviews establish the reasons why existing studies are not generally satisfactory for determining the effects of health promotion programs in business (Leviton, 1989). Warner et al., (1988) in a major review conducted at the University of Michigan concludes: "In essence, based on work published through early 1986, we conclude that a conceptually and empirically sound understanding of the basic behavioral effects of work place health promotion programs is sorely lacking. In the majority of program areas, assessment of the behavioral impact of interventions is primarily anecdotal or based on research that cannot meet minimum standards of scientifically valid evaluation."

According to Shephard (1992), "Despite the abundance of data, many studies suffer from limitations of experimental design, and there have been few attempts to compare potential program options within the same company. Views on the relative effectiveness of program alternatives thus remain largely intuitive, whether the effectiveness be measured in terms of process (recruitment and adherence), current worker satisfaction, (turnover, productivity, absenteeism, and perceived health), or predicted future health (cardiac risk factors)."

In order to evaluate the benefits or effectiveness of a fitness program, one must first rank the importance of the various postulated benefits. Different program types or components variously effect certain outcomes. Therefore, studies are frequently confounded in designs that collect outcome data that doesn't relate to the nature of the program (Chenoweth, 1993).

There are many practical difficulties that hamper experimental design at the work site:

> Programs selected for evaluation are often those that appear to be faltering (Murphy, Gasparto and Opatz, 1987) while those individuals who provide the data for analysis are often anxious to prove program success (Veney and Kaluzny, 1984).

When medical screens are voluntary, those who decline to participate often are those who exhibit multiple risk factors (Jones et al., 1991). Because only a small number of employees utilize the major portion of medical benefit dollars (Edington, 1992), employees who decline to participate may represent those multiple risk employees.

Chenoweth, (1990), reviewed the literature on cost-effectiveness analyses of work site health promotion programs and reported that short-term results of work site health promotion programs are well documented but that the present literature is dominated by the findings reported at large organizations. According to Chenoweth, many companies have not evaluated their programs, or have not published their findings; very few cost-effectiveness analyses have been performed, and in those that have, most cost effectiveness claims are misleading.

Patton (1991), emphasizes the characteristics of the organization in question when determining the effectiveness of a health promotion program. According to this author, agencies with a highly productive, difficult to replace, and older employee group are most likely to find health promotion to be a good investment. Patton notes also that productivity gains produce the majority of the economic benefits of the program where such gains are defined by turnover rates, cost of turnover, and absenteeism. Projecting these variables and their relation to health promotion is critical to predicting the financial impact of the program.

Also, according to Patton (1991), effectiveness depends upon the specific health problems addressed by the program. For example, a company with a 99% female work force should look at a mammography and pap test program; another firm with a large number of smokers needs to concentrate on smoking cessation. Hence, the employee population determines the effectiveness of the chosen program, which in turn plays a large role in determining the economic impact on the company.

APPENDIX E

COURT DECISIONS ON MANDATORY RETIREMENT AGE FOR PEACE OFFICERS

COURT DECISIONS ON MANDATORY RETIREMENT AGE FOR PEACE OFFICERS

Case	Court	Year	Age	Outcome	Comment
Whitfield v. City of Knoxville	E. Dist. Tenn	1983	50	Plaintiff	
Mahoney v. Trabucco	Dist. Mass	1983	50	Both	Struck down age 50 for desk officers but upheld it for road officers.
E.E.O.C. v. Tennessee Wildlife Resources Agency	6th Cir.	1988	55	Plaintiff	Court rejected argument that presence of elevated levels of CAD is a significant health factor that precludes substantially all persons over the age of 55 from performing the duties of a law enforcement officer.
E.E.O.C. v. State of New Jersey	Dist. N.Jersey	1986	55	Defendant	Court found that older officers are significantly more susceptible to asymptomatic CAD.
Heiar v. Crawford County, Wis.	7th Cir.	1984	55	Plaintiff	Mandatory retirement age due to CAD not necessary because employer doesn t test any of its officers, at any age.
E.E.O.C. v. Kentucky State Police	6th Cir.	1988	55	Plaintiff	Reversed lower court ruling that upheld a mandatory age-55 retirement.
E.E.O.C. v. City of Bowling Green	W. Dist. Kent.	1985	57	Plaintiff	Court found that 90% of officers age 57 could perform job, assuming they exercised regularly, didn t smoke, maintained weight.
E.E.O.C. v. City of Allen Park	E. Dist. Mich	1984	57	Plaintiff	Retirement age contained in collective bargaining agreement struck down.
E.E.O.C. v. Missouri State Highway Patrol	5th Cir.	1988	60	Plaintiff	Court ruled that a CAD defense was not age-related
E.E.O.C. v. Comm. of Pennsylvania	3rd Cir.	1987	60	Plaintiff	Court found that before fitness and dexterity can be BFOQs, they must required of all officers, regardless of age.
E.E.O.C. v. Mississippi State Tax Commission.	5th Cir.	1988	60	Plaintiff	Employer had not established health and fitness standards for all of its employees.
Popkins v. Zagel	C. Dist. Ill	1985	60	Defendant	Court held that state had met burden of showing that substantially all persons over 60 lack physical capacity to work effectively and that it is impractical to test everyone over 60.

Case	Court	Year	Age	Outcome	Comment
E.E.O.C. v. East Providence	1st Cir.	1986	60	Defendant	Physical strength, stamina, and ability to withstand stress are job qualifications reasonably necessary in police officers, which substantially all person over 60 can t meet and it is impractical to test everyone.
E.E.O.C. v. State of Florida	N. Dist. Fla	1986	62	Plaintiff	No factual basis for assuming persons over 62 could not perform trooper job safely and it isn t impossible of impractical to deal with the issue of employee fitness on a case-by-case basis.
Coleman v. Omaha	8th Cir.	1983	62	Plaintiff	City didn t contest fact that mandatory retirement age violated ADEA.
E.E.O.C. v. City of Minneapolis	Dist. Minn	1982	65	Plaintiff	Court ruled that it is possible to determine on an individual basis if persons could perform the job of police captain after age 65.
Dillon v. Chicago	N. Dist. Ill.	1985	65	Plaintiff	City didn t meet burden of showing that persons over 65 could not perform the duties of a police officer.